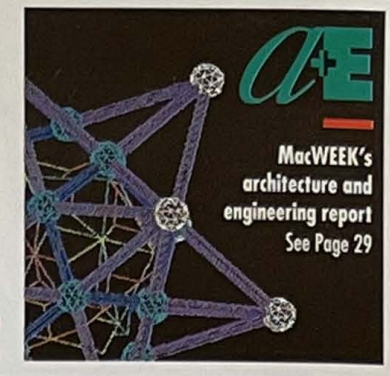
MacWEEK

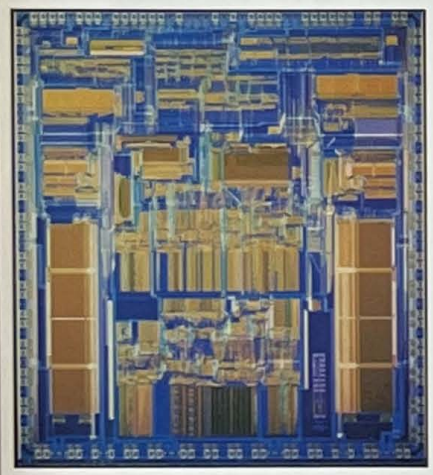
23 January 1990 Vol. 4 No. 3 WORKSTATION NEWS



Motorola tosses '040 into CPU ring

By Rochelle Garner

Austin, Texas — Motorola Inc. last week officially unveiled its 68040 processor, the latest generation in the family of chips that powers every Macintosh.



Motorola's 68040, packing 1.2 million transistors, promises three times the overall performance of a 25-MHz 68030.

The company's Microprocessor Products Group said it expects volume shipments, initially of a 25-MHz version of the chip, to begin by midyear.

According to Motorola, the completely redesigned 32-bit microprocessor offers three times the overall system performance of a 25-MHz 68030, performing floating point operations 10 times faster and integer calculations three times faster.

The new CPU, according to Motorola, can process up to 20 million instructions per second (mips), in contrast with 15 mips for Intel's 80486 processor and 5 to 6 mips for a 25-MHz 68030.

Michael Slater, editor and publisher of the Palo Alto, Calif.-based Microprocessor Report newsletter, cautioned that such numbers should be taken with a grain of salt. "Performance numbers are always subject to lots of interpretation. With the amount of accuracy behind [Motorola's and Intel's] figures, you can't really be sure if 15 mips is smaller than 20. They both are in the same ballpark."

Because the 68000 family was designed from the beginning with a 32-bit architecture, Motorola said that existing applications will see immediate improvements in speed on the 68040 and that system software

See Motorola, Page 10

Apple earnings skid, sales lag

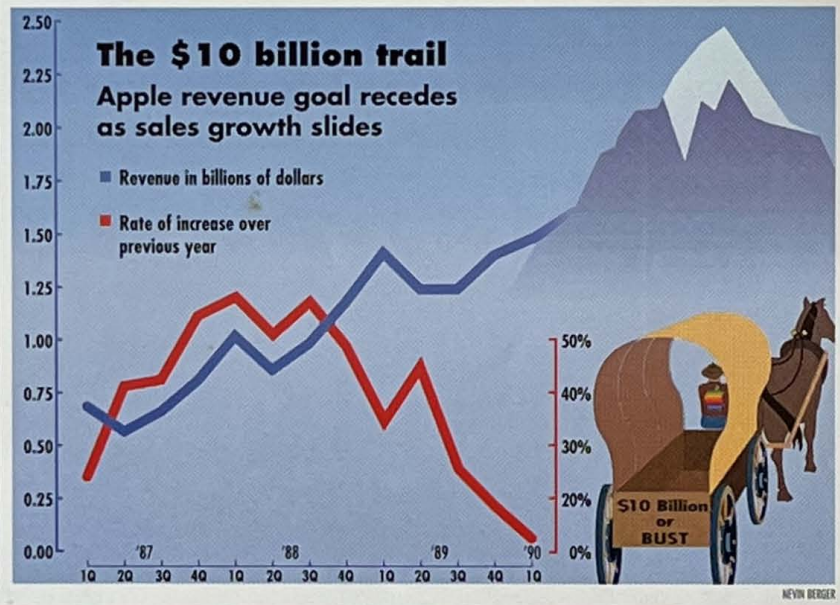
Cost-cutting moves target jobs, perks

By Pamela Pfiffner

Cupertino, Calif. — Apple last week posted a decline in net income for the first quarter of fiscal 1990, the fifth consecutive quarter in which earnings growth declined from year-before levels.

The company reported that first-quarter earnings dropped 11 percent to $124.8 million, or 96 cents per share, compared with $140.5 million, or $1.10 per share, for the same period a year ago. The net income figure, Apple's statement said, reflects $33.7 million for "expenses related to cost reduction programs and damages resulting from the October 1989 earthquake in the [San Francisco] Bay area."

In anticipation of the quarterly totals, Apple early last week announced a series of cost-control measures (see related story, Page 67).



Revenues for the quarter, which ended Dec. 29, inched up 6 percent to $1.49 billion from $1.40 billion in the first three months of fiscal 1989. Apple said international sales accounted for 36 percent of revenues, compared with 32 percent for the same period in 1989.

"The modest year-over-year growth in revenues reflects diverse growth rates of our various products," Apple CEO John Sculley said.

See Earnings, Page 10

Apple letter fingers leak in IIci scoop

By John Battelle

Cupertino, Calif. — Proprietary information is as good as gold to a computer company, and Apple last week sent a strong signal to its developers and users that it hopes to catch anyone who tries to jump its claim.

Apple announced that it has identified the source who leaked confidential information to MacWEEK regarding the then-unannounced Mac IIci computer. The resulting news article included a photograph of the prototype machine's motherboard (see MacWEEK, July 25, 1989).

The incident, one in a long string of Apple leaks, reportedly sparked an intensive search by Apple for the culprit. The result was the "Open Letter to the Apple Com-

See Letter, Page 9

Aldus, Silicon Beach to tie knot

By Carolyn Said

Seattle — If the Mac graphics market were a game of Monopoly, you could say that Aldus Corp. already owns hotels on Boardwalk and Park Place and is on the verge of adding all four railroads and Marvin Gardens to its stash.

Aldus, based here, last week announced that it has signed a letter of intent to acquire San Diego-based Silicon Beach Software Inc. If consummated, the deal will add SuperCard, SuperPaint, Digital Darkroom, Super 3D and Personal Press, a forthcoming low-end publishing package, to Aldus' existing Mac stable, which includes PageMaker, Persuasion, FreeHand and the forthcoming PrePrint.

"We think all of [Silicon Beach's] products are complementary to our existing line," said Aldus President Paul Brainerd. "We are very interested in SuperCard as a platform for multimedia applications."

Industry analysts said a move into multimedia is a natural next step for the company that pioneered desktop publishing.

"Aldus is in the business of developing products that enhance communication. Desktop publishing, presentation, drawing, paint and multimedia all fit into that," said Craig Cline, associate editor of the Seybold Report on Desktop Publishing of Malibu, Calif.

"This will enhance Aldus' posi-

See Silicon Beach, Page 10

PageMaker 4 adds Story Editor

By Carolyn Said

Seattle — In response to user requests and increased competition from Quark Inc., its chief rival in the desktop publishing arena, Aldus Corp. is preparing to introduce a new version of PageMaker.

"I think PageMaker 4.0 is good enough to stop the hemorrhaging of people switching to QuarkXPress. Whether it's good enough to bring back XPress converts remains to be seen," said one source who has used the new version.

Aldus reportedly plans an early

See PageMaker, Page 10

LATE NEWS

ATM update to fix spacing problems

Mountain View, Calif. — Adobe Systems Inc. will announce an update to Adobe Type Manager next week. The company said Version 1.2 of ATM will offer improved support for fractional width spacing, better boldface spacing on screen and compatibility with Bitstream typefaces. Adobe will also announce a new library of entry-level typeface packages for ATM. □

On Location this week with Mitch Kapor

Cambridge, Mass. — ON Technology Inc., a new venture of Lotus Development Corp.'s founder Mitch Kapor, is announcing its first product this week. On Location, a $129.95 desk accessory, indexes, searches and displays the contents of files in a variety of formats. Sources familiar with the product, which is due by the end of February, said it offers rapid retrieval and small index files. □

NEWSPAPER SECOND CLASS

ColorMAX 8/24. It goes from 8 to 24 bits in $500 flat.

A typical 8-bit color system costs about $6000. But when you upgrade to 24 bits, it can cost you over $9000. And weeks of time, while you wait for your new video card.

Or you can buy a Sigma ColorMAX® 8/24 for $6295. It's the best 8-bit, 19″ Trinitron system available for the Mac IIxx family. And you can upgrade it to 24 bits in no time flat. Just by adding $500 worth of VRAM to the existing sockets.

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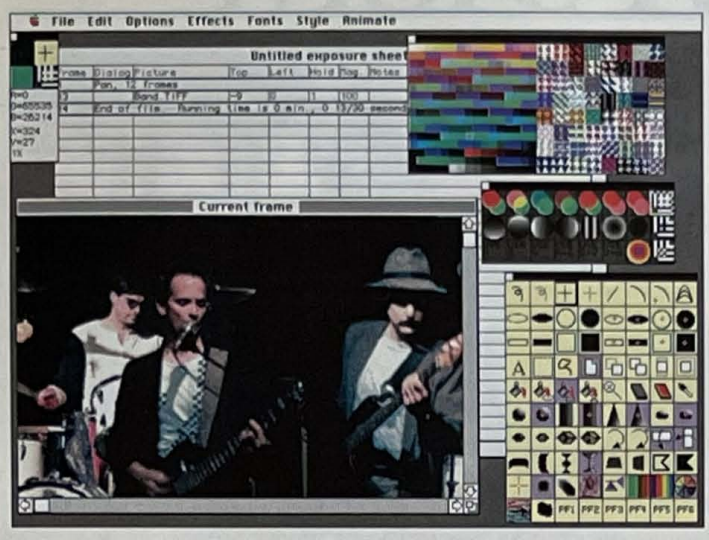

The Animation Stand from Linker Systems offers professional-quality tools for animators and graphic artists at a much lower price than traditional systems. It features built-in links to film and video boards as well as a command language that lets users easily specify effects and times.

Linker Systems brings pro animation to the Mac

By Connie Guglielmo

New York — Linker Systems Inc. this month began shipping The Animation Stand, a high-end system for animators and graphic artists who want use the Mac to create professional-level productions.

Priced at $7,495, The Animation Stand is designed to offer the same functionality as the more-costly paint boxes and animation systems traditionally used by animators, according to Sheldon Linker, vice president of technology.

"Our design philosophy was simple: Know what your users want and need," Linker said. "We've spent the past year talking with animators and learning how we could incorporate techniques they use."

The Animation Stand, demonstrated here last week at the Computer Graphics Show, has three major components: a 32-bit color paint program, an animation and special effects system, and what the company calls an optical press system for creating complex optical effects as well as black-and-white and color mattes.

The paint program offers 80 tools, including lighting and shading controls; Blend, Flip, Twist, Tilt, Rotate, Smudge, Stretch and Squash commands; and the ability to wrap images around 3-D objects.

For creating animations, the system supports an unlimited number of layers. This means that several elements, such as animated characters and flying logos, can be combined within each frame. The Animation Stand also offers automatic time and frame tracking, sound synchronization, and five types of anti-aliasing.

All elements of the production are organized and controlled using the exposure sheet, a spreadsheet that logs each frame and its associated sounds and effects as well as frame duration and transitions between frames.

Using a simple command language in the exposure sheet, animators and artists can specify or change times and effects. "If you type 'dissolve,' there will be a dissolve at the specified time," Linker said. "If you type 'Make this object transparent,' the program does it automatically. You can outline and rework the entire presentation in the sheet."

The Animation Stand can play back eight-bit color animations in real time on a Mac II equipped with only 1 Mbyte of RAM, according to Linker. More memory is required for 16- or 32-bit color animations.

Built-in links to film and videotape recorders allow users working with video graphics boards, such as the NuVista from Indianapolis-based Truevision, to send animations to those devices. File formats supported include PICT, PICS and Wavefront Technologies' rla format.

Linker Systems Inc. is located at 13612 Onkayha Circle, Irvine, Calif. 92720; (714) 552-1904. □

IMT to show MultiLink

Scottsdale, Ariz. — Interactive Media Technologies Inc. said last week that it will unveil the first component in its long-awaited line of multimedia hardware products at April's Macworld Expo in San Francisco. IMT said it plans to demonstrate and accept advance orders for the MultiLink, an intelligent hub that will allow users to control up to 10 devices, including virtually any audio or video source with a serial or parallel port, from a desktop Mac or IBM PC or compatible.

IMT said its best-known project, a dual-deck VCR editing unit, is now expected in early 1991.

Interactive Media Technologies Inc. is located at 7320 E. Butherus, Suite 200, Scottsdale, Ariz. 85260; (602) 443-3093. □

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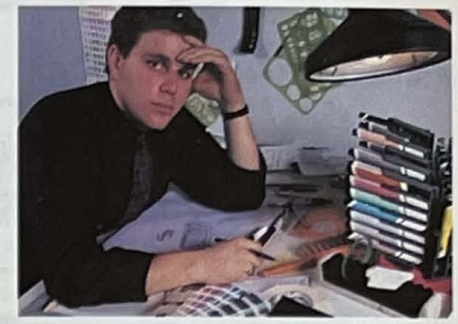

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Adobe: Type 1 font specs on track

Competitor: 'Nice gesture but too late'

By Steve Hannaford

Mountain View, Calif. — Attempting to squash speculation that it will deliver only partially on promises made at last September's Seybold conference, Adobe Systems Inc. said its eagerly awaited specification for Type 1 fonts is on schedule for release in the first quarter of this year.

The publication of the specification, publicly promised by Adobe Chairman John Warnock in response to the Apple-Microsoft Corp. font alliance, will give all vendors access to enhanced PostScript features, such as low-resolution font hinting, that until now have been closely guarded secrets known only to Adobe and a few licensees.

The new documentation also will help manufacturers of PostScript-clone printers and developers of font manipulation programs (such as Letraset's LetraStudio and FontStudio) to make their products compatible with Adobe's font library.

In the past, third-party font developers and non-Adobe-licensed PostScript printer vendors have had to use the more limited but public Type 3 font format.

In recent months, several companies announced they had cracked the Type 1 secrets and are now offering full Type 1 compatibility, but Adobe's specification promises to create a level playing field on which all PostScript developers can compete.

According to Malcom McGrory, president of Hyphen, a Chelmsford, Mass., PostScript-clone developer, the specification is a "nice gesture but too late for serious clones. [Adobe] could have given the clone developers a one-day seminar and answered all our questions about fonts back in September." McGrory said that Hyphen's customers have had access to Type 1 fonts since October 1989.

Dan Barthel, president of The Font Company of Phoenix, Ariz., agreed that the specification has been slow in coming. And although he believes his company's fonts are now Type 1-compatible, Barthel said, he will be glad to see the specification released.

"We hope that Adobe will act in a statesmanlike way, because we do want to cooperate with them," Barthel said. "The true test will be how fully it documents sensitive information such as exactly how the font hinting parameters work."

Rob Babcock, product marketing manager at Adobe, denied that the company has been dragging its feet. Rather, he said, putting the specification together has been a complex and time-consuming task, especially because Adobe had minimal internal documentation for Type 1 fonts when the project began. "The draft manual is complete, and an editor is now working on the book," he said.

To verify the accuracy of the specification, Adobe plans to conduct extensive internal testing before shipping the product, Babcock added.

The specification will include a description of all Type 1 compression, encoding and hinting, Babcock said. It also will provide information on making third-party Type 1 fonts compatible with Adobe Type Manager (ATM).

It will not, however, contain information about ATM's screen rendering algorithms, since ATM is a separate, proprietary program.

The specification will be released as a separate document that will supplement the current Adobe Red Book specification for the PostScript language. While the price has not yet been decided, Babcock said it most likely will be only enough to defray publication costs. The document will be available to anyone in the industry who wants it.

Adobe Systems Inc. is located at 1585 Charleston Road, P.O. Box 7900, Mountain View, Calif. 94039; (415) 961-4400. □

MicroMat stacks give advice on Mac diagnosis and repair

Novato, Calif. — MicroMat Computer Systems recently announced a series of HyperCard-based expert-system stacks to assist technicians in diagnosing and repairing the Mac.

The stacks, collectively known as MicroCAT (for computer-assisted trouble-shooting), combine expert advice for technicians with detailed illustrations of components and schematics.

The stacks will be released during the next six months, starting with the SE repair-guide module, MicroCAT SE1, in February, according to MicroMat. Each module will cost $100, which includes four free upgrades; a $15 demo version of MicroCAT SE1 will cover the analog board.

MicroMat Computer Systems is located at 7075 Redwood Blvd., Bay No. 4, Novato, Calif. 94947; (415) 898-6227. □

MicroMAT's stack series, MicroCAT, will provide expert-system-based diagnostics for Macintosh components and systems.

More design effects enhance ImageStudio

Paramus, N.J. — Additional design effects and a halftone preview module enhance the latest version of ImageStudio, Letraset's gray-scale illustration program.

Released last week, the $495 ImageStudio with Effects Modules lets users rotate images at any angle, control transparency or opacity of any selected shade or object, and fine-tune a screen area or object on a clipboard before integrating it into the full image.

The halftone preview module converts gray-scale pictures into black-and-white bit-mapped images configured with any of several dot shapes. Halftones can be previewed on Mac displays of any resolution and can be saved as TIFF files.

Users who bought ImageStudio after Aug. 15, 1989, can upgrade free. Users who purchased it before that date can upgrade for $99.

Letraset is at 40 Eisenhower Drive, Paramus, N.J. 07653; (201) 845-6100. □

ImageStudio now gives designers more freedom to experiment with artistic effects.

CHUCK NACKE/PICTURE GROUP

Have Mac, will travel — by bicycle

Santa Cruz, Calif. — Steve Roberts, a high-tech nomad who travels the world on a computer-laden recumbent bicycle, has adopted the Macintosh Portable.

He plans to run a custom HyperCard stack on the Portable to control the complex array of microprocessors, 82-watt solar panels, and radiation and vibration detectors incorporated into his 300-pound rig. He uses a modified Personics HeadMouse and in-handlebar keyboards for input. He will communicate using TCP/IP via MicroSAT ham-radio bulletin-board-service satellites, which are scheduled to be launched this week from Kenya.

Roberts, who is chronicling the technical details of the project in his bimonthly journal, Nomadness, plans to depart in midsummer for a journey to an as-yet-undetermined country. The first public showing of the Mac-run bicycle will take place next week at the BMUG Mac 90 show in Berkeley, Calif.

Nomadic Systems can be reached at P.O. Box 2390, Santa Cruz, Calif. 95063; (408) 459-9780.

New Apple INITs fix Portable, 800K floppy drive problems

By Raines Cohen

Cupertino, Calif. — Apple last week released two new Startup documents (INITs) designed to "enhance the reliability" of Apple products.

▶ The Macintosh Portable INIT, announced last month, remedies communications and printing problems reported by users of some Macintosh Portables (see MacWEEK, Dec. 12, 1989).

Bill Cook, technical adviser at Pitney Bowes Inc. of Norwalk, Conn., said: "It works. It cures all of the difficulties I'd been experiencing with external modems and asynchronous and AppleTalk printers."

▶ The Apple 800K Eject INIT is designed to position the read-write head in Apple's 800-Kbyte floppy drives at Track 79 when disks eject, the company said. The process, similar to parking the heads on a hard disk, centers and lifts the head before the floppy is ejected, reducing the likelihood of the upper head being torn off by the disk shutter closing.

The new INIT's functions are already built into System 6.0.4, the company said.

Steve Sawyer, partner at CJS Systems, a Berkeley, Calif., third-party repair firm, said he wondered why Apple took so long to introduce the fix. "In our opinion, based on five years of Mac repair experience, having replaced hundreds of 800-Kbyte Sony drives, it's the second-most-common cause of Macintosh failure. The design was flawed in the first place, and Apple has known this for at least three years."

CJS encouraged Jay Riley of Datamagik, an Oakland, Calif., consulting firm, to develop a similar INIT, SafeEject, which has been distributed free since last summer.

Both new Apple INITs have been posted on AppleLink and should be available at no charge through standard Apple system software channels, including dealers and users groups. □

For the Record

Last week's MacWEEK story about a software upgrade for Orange Micro Inc.'s MS-DOS coprocessor boards gave an incorrect phone number for the company. The correct number is (714) 779-2772.

More Rave Reviews for the #1 SQL Database.

PC WEEK

Oracle for Mac Solves DBMS Puzzle

SQL/HyperCard Combo Produces Sophisticated Applications

By Susan Janus

Database giant Oracle Corp., of Belmont, Calif., recently rounded out the list of platforms supported by the company's relational database-management system (DBMS) with the release of Oracle for Macintosh.

The new Mac DBMS teams the power of Oracle's Structured Query Language (SQL) with HyperCard's customizable and easy-to-use interface.

This combination allows Mac developers to create sophisticated applications that appear simple to users—a unique software-development opportunity unavailable on any other platform, including the PC, according to early corporate users we contacted.

In addition, users said, the network version of Oracle for the Mac allows the advantages of the HyperCard interface to serve as a front end to existing corporate relational databases residing on other platforms, such as mainframes and minicomputers.

Consequently, the Mac software has great potential for su[illegible]

Oracle for Macintosh

DBMS Brings New Power and Face to Mac Application Development

WHAT CORPORATE BUYERS LIKE

- Offers SQL capabilities
- Uses HyperCard to mask complexity of database applications
- Serves as front end to relational databases on other platforms
- Can link different Oracle database platforms with network version
- Provides good documentation and support

oping database-manageme[illegible] systems to connect departmental Macs to larger systems. Jeff Menz, a systems analyst for a scientific R and D organization, is currently using Oracle for Macintosh to develop a system that will give the company's numerous Mac users access to an Oracle database running on a VAX. Using the networking version, Menz will link departmental AppleTalk networks to the VAX over a TCP/IP network.

Oracle Provides the Groundwork

The key benefit of Oracle's product is that "all the fundamental technical work—the protocols, the compatibility with the AppleTalk network—has been done by Oracle," Menz said. "I just have to build the HyperCard interface and do the database design work."

The result will be an Oracle relational database application on the VAX with a HyperCard front end that Mac users feel comfortable with, he explained. Also, the company will have one logical relational database instead of numerous fragmented local databases. This allows tighter security, improved data integrity and better performance, he added.

"ORACLE for Macintosh is a well-designed product...a programmer can, with just an hour's training, create a database on a host with a simple Macintosh interface in three minutes—honest." ★★★★

MacUser, June 1989

"ORACLE for Macintosh is exciting for companies that have Oracle (or DB2) databases on a mainframe and want a practical Mac data entry and development system."

MacWeek, March 14, 1989

"Get yourself a copy of ORACLE for Macintosh and get a flexible toolkit that can be molded to solve just about any database problem."

MacGuide Magazine, June 1989

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[1] Stand-alone version licensed for developers only. Requires Macintosh SE or II with 2 Megabytes of RAM, 5 Megabytes of hard disk space, floppy disk drive, and HyperCard 1.2. Includes 30-day installation support. ORACLE database, Hyper•SQL (HyperCard Interface), SQL•Plus, OCI and Pro•C (Macintosh Programmer's Workshop is required for programming usage), System Stacks and Example Stacks. Full networking version is $999 and includes SQL•Net (for database communications), Async, 3270, DECNet, TCP/IP support, Alisa System's TSSnet, DECnet protocol and drivers and Kinetic's TCPort TCP/IP protocol and driver. Accessing database software on other machines requires a separate protocol handler and gateway software for the other machine. Call for additional information.

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DaynaNET gets new flexibility

Upgrade supports multiple servers

By Henry Norr

Salt Lake City — Dayna Communications Inc. this week begins shipping new versions of its DaynaNET network operating system that support multiple servers and zones over Ethernet as well as LocalTalk. The company also has added an enhanced LocalTalk interface card for Micro Channel-based IBM PS/2s to its networking line.

DaynaNET, which uses a dedicated 80286- or 80386-based machine as a file server for Mac or mixed networks, has until now been available only in a $1,249 package that was limited to a single server and zone and supported only LocalTalk cabling. This week's releases, all of which work with multiserver networks, provide a variety of new options based on the number of users and the cabling installed (see chart, above). All packages include one DaynaTALK PC network interface card for an AT bus machine.

DaynaNET price chart

Model	Supports	Retail
DaynaNET 4L	2 to 4 users on LocalTalk	$795
DaynaNET 8L	2 to 8 users on LocalTalk	1,795
DaynaNET 8LE	2 to 8 users on LocalTalk and/or Ethernet	2,195
DaynaNET XL	2 to 100 users on LocalTalk	3,595
DaynaNET XLE	2 to 100 users on LocalTalk and/or Ethernet	3,995

DaynaNET, a specially adapted version of NetWare from Novell Inc. of Salt Lake City, offers the sophisticated security and backup options for which NetWare is known. Dayna's version, however, can be installed and administered from any Mac on the network, and it offers simplified procedures and documentation tailored to the Mac environment, the company said.

Mac workstations on a DaynaNET network use Apple's AppleShare client software and its familiar interface to access network services.

The previous version of DaynaNET has been discontinued. Users can upgrade to DaynaNET 8L for no charge or to the XL package for $500, the company said.

David Schamens, CEO of Carolina First Securities Group Inc., a Winston-Salem, N.C., brokerage firm, said he turned to DaynaNET for his firm's network of six Macs and four AST Research clones because he wanted a network with a dedicated file server at a reasonable price. He called Dayna's administrative software "absolutely super" and said the network works so fast that he is reconsidering his original intention to move up to Ethernet.

On the other hand, Schamens said, a problem with Microsoft Works has forced Carolina First to keep its older and slower network, based on MacServe from Infosphere of Portland, Ore., in place alongside DaynaNET. Microsoft Corp., he said, has acknowledged a folder-numbering incompatibility that makes Works incompatible with the Dayna product, with NetWare and with 3Com servers.

DaynaTALK MC, the new Micro Channel interface card, works with IBM PS/2 models 50 and up used as workstations or servers. It is priced at $399, or $1,399 for a four-pack. The card, according to Dayna, can send and receive data at LocalTalk's standard 230-Kbps speed or at various speeds up to 1.7 Mbps on networks using acceleration hardware from Dayna or Alameda, Calif.-based TOPS, a division of Sun Microsystems Inc.

Dayna Communications Inc. is located at 50 S. Main St., Salt Lake City, Utah 84144; (801) 531-0600. □

Less-than-$10,000 PostScript printer for 11-by-17 paper

By Pamela Pfiffner

Mobile, Ala. — QMS Inc. this month unveiled what it said is the first Adobe PostScript printer capable of printing on 11-by-17-inch paper but priced at less than $10,000.

The QMS-PS 2200 Model B boasts print speeds of 22 pages per minute for 8.5-by-11-inch paper and 11 pages per minute for 11-by-17-inch paper. Priced at $9,995, it includes a 68020-based controller, 4 Mbytes of RAM, 1 Mbyte of ROM and 39 Adobe PostScript typefaces. The print engine has a duty cycle of 20,000 pages per month. QMS would not specify the manufacturer of the engine.

A hard disk can be attached to the printer's SCSI port for font storage and caching. The company's 20-Mbyte QMS-SC 20 and 40-Mbyte QMS-SC 40 drives are priced at $995 and $1,495, respectively.

QMS also announced a sales promotion for its QMS-PS 2200 Model E printers. For each QMS-PS 2200 Model E unit purchased directly from QMS at the list price of $15,995, the buyer is entitled to purchase a QMS-PS 820 turbo printer for $3,495, half its list price. The promotion is scheduled to run through March 31.

QMS Inc.'s Electronic Publishing Group is located at One Magnum Pass, Mobile, Ala. 36618; (800) 631-2692. □

Omnis for Windows links Mac, PC data

By John Battelle

Foster City, Calif. — Blyth Software Inc. last month shipped a version of its Omnis 5 database for use with Microsoft Windows on MS-DOS platforms.

Omnis 5 for Windows will share data and applications with the Mac version of Omnis 5, which Blyth released last June. This allows an Omnis 5 multi-user database to run on a mixed network of Macs and IBM PCs, Blyth officials said.

The Windows version allows multiple windows, interactive buttons, graphics, and control over fonts and color. Joey Gurango, president of Match Data Systems, a Bellevue, Wash., consulting company, described the new release as "nearly identical" to the Mac version.

"If you want to take an application [written in Omnis 5 for the Mac] over to Windows, 70 percent to 80 percent of your work is already done," Gurango said. "Some font problems and interface differences still have to be resolved, but it's the least painful cross-platform database I've worked with."

Applications developed with Omnis Quartz, Blyth's previous MS-DOS offering, can be ported to Omnis 5 but may require some rewriting, Blyth officials said.

Blyth plans to introduce the third member of its Omnis family, for OS/2 platforms, by mid-1990.

Omnis 5 for Windows costs $795 for a single user and $99 for each additional user. Upgrades from Omnis Quartz are $199 plus $25 per additional user.

Blyth Software Inc. is at 1065 E. Hillsdale Blvd., Suite 300, Foster City, Calif. 94404; (415) 571-0222. □

PerfectPartner targets small businesses

By Edwin Garcia

Plainville, Mass. — The Process Resource Inc. has announced PerfectPartner, a $459 HyperCard-based program intended to help small businesses and corporate departments manage day-to-day operations electronically.

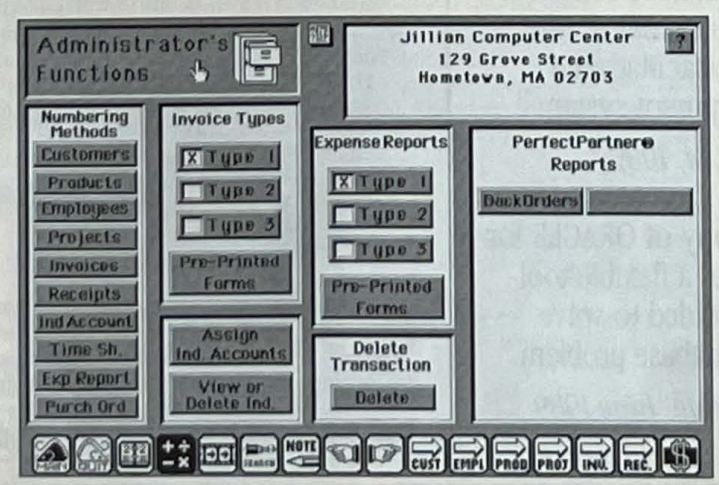
The program, which is expected to ship by the end of March, tracks data on customers, employees, products and projects; generates receipts, invoices, catalogs and a variety of reports; and summarizes financial information into customer-specific and company-level worksheets.

PerfectPartner is targeted at organizations that are automating their activities for the first time. The company said it had selected features and designed the program's interface on the principle of WYSIWYN (What You See Is What You Need).

"Entering data is user friendly, and it is easy to maintain," said Wayne Mante, operations manager at Jolt Technology Inc. of Fort Lauderdale, Fla. Mante has been testing the program for inventory, shipping, receiving and billing at his 12-employee contract assembly company.

Mante, who uses PerfectPartner on a Mac IIcx, said the program does suffer from HyperCard's drawbacks, such as its inability to support full-page display and its limited printing capabilities.

The Process Resource Inc. is at 5 Manmar Drive, Suite 453, Plainville, Mass. 02762; (508) 226-6616. □



Targeted at businesses automating activities for the first time, PerfectPartner controls administrative functions and offers fast access to expense reports, invoices and back-ordered products.

MacWEEK

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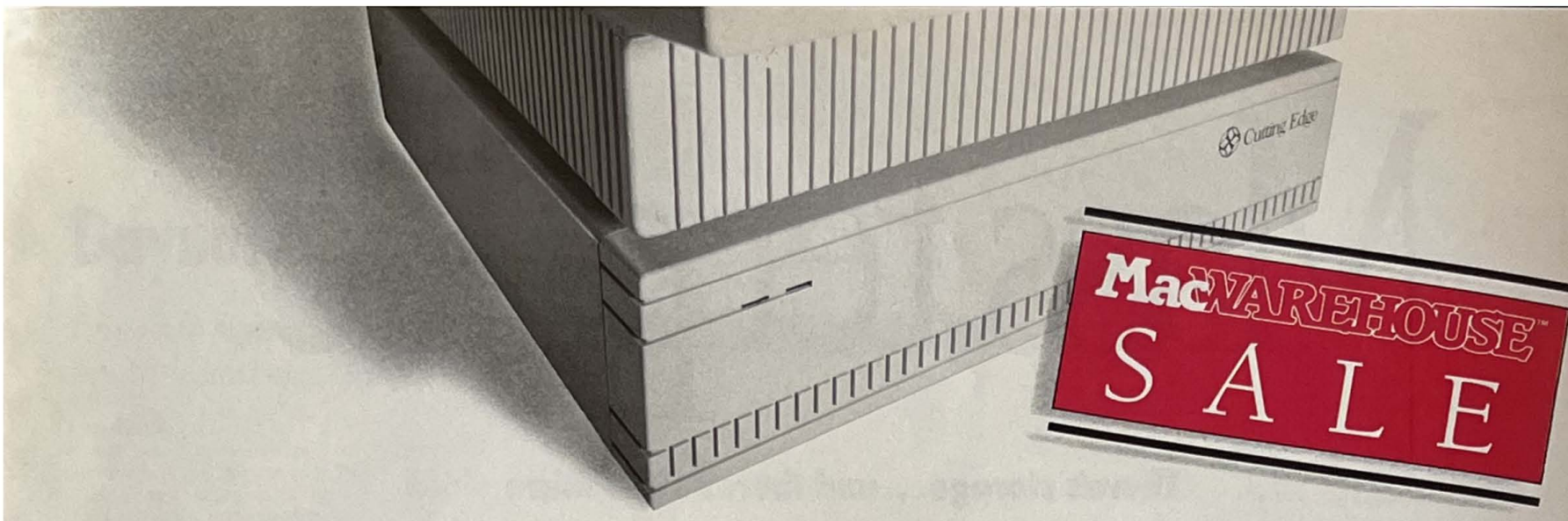

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The joint letter from Apple and RasterOps said preventing leaks like the story shown at right is "the key to moving the computer industry into the 21st century."

MacWE

28 July 1989 Vol. 3 No. 27 WORKSTATION

Sneak preview: New 25-MHz Mac

By John Battelle

Cupertino, Calif. — The much-anticipated 25-MHz version of the Mac IIxi, due in September under the name Mac IIci, is in the pre-production stage, and a prototype examined by MacWEEK reveals a platform that substantially outperforms its 16-MHz predecessor.

According to sources close to Apple, the IIci will be priced about 13 percent higher than the IIxi. A IIci with 4 Mbytes of RAM and an 80-Mbyte hard disk reportedly will cost about $8,100, compared with $7,089 for a similarly equipped IIxi.

The extra $1,000 will buy an on-board video controller, a faster processor and a direct 120-pin slot.

As reported earlier (see MacWEEK, Mar 28 and June 6), a single VLSI (very large-scale integration) chip on the new machine's motherboard provides one-, two-, four- and eight-bit video, leaving all three NuBus slots free. On-board color video has been incorporated into IBM's latest machines and is a checklist item found increasingly often on corporate buy sheets.

MacWEEK benchmark tests showed the prototype IIci performing at speeds well above those of the IIxi. Even in eight-bit mode, the performance of the on-board video exceeded that of Apple's eight-bit video card running in a

Faster chip and built-in video on IIci motherboard

1. Built-in 8-bit color video
2. 25-MHz 68030 processor
3. 120-pin processor direct slot
4. Oscillators for 3 Apple monitors

See Mac IIci, Page 9

Apple clamps down on Connect forum

By John Battelle

Cupertino, Calif. — Apple last week announced that it will enforce a strict definition of its policies regarding electronic distribution of information gleaned from its AppleLink on-line service.

The decision's first casualty was the thriving Apple Support Area on Connect Inc.'s on-line service. A message posted by Stu Gitlow, forum manager for the Apple Support Area, explained, "Since we can no longer effectively respond to queries using Apple-sourced information, we are removing the Apple Support Area."

The dispute involves the interpretation of Apple's Software Network License Agreement and its AppleLink Network License Agreement. The Software Network License, a contract between on-line providers and Apple, stipulates that only certain items, such as System software and press releases, can be posted on-line, and then only with Apple's express written consent.

The AppleLink Network License, on the other hand, gives the user the right to "reproduce and distribute non-confidential information accessed through the AppleLink Network as necessary to support Apple products."

Prompted by complaints from managers of on-line forums that did not use AppleLink as an information source, Apple's legal department determined that the Software Network License should govern what can and cannot be posted on-line. Apple officials could not comment by press time, but sources outside the company said meetings were taking place at Apple to review the new policy.

Most on-line users and systems operators reacted negatively to the news, but one well-known on-line figure came quickly to Apple's defense.

"I run a good support forum without information from AppleLink," said Neil Shapiro, chief systems operator of CompuServe's Apple section, the Micronetworked Apple Users Group, or MAUG. "Apple shares its software more than any other company in the world. It is up to everyone to make sure it ... is distributed in a legal and orderly matter."

Others, however, particularly developers and consultants who depend on on-line sources for up-to-the-minute Mac information, were upset with Apple's new policy. "Those who use the information [from Connect] are some of the staunchest supporters of Apple in the corporate environment," one developer said in a written response to the incident. "I am appalled at this loss of a tremendous resource." Another called the decision "shortsighted" and "legalistic."

Gitlow, a certified Apple developer as well as a practicing physician, said he is negotiating with Apple in the hope of clarifying and possibly rescinding Apple's decision. "If we're guilty of anything, it is of doing too good a job gathering all the material [Apple] meant for public consumption," he said. □

Letter

From Page 1

munity," which named RasterOps Corp., a developer of graphics display systems in Santa Clara, Calif., as the source of the leak.

Signed by both RasterOps President Kieth Sorenson and Jean-Louis Gassée, president of Apple Products, the letter stated the two companies have "reached a confidential settlement of the matter." Officials at both companies declined to disclose terms of the settlement.

"We are sending a message that we are very serious and that you'd better think twice if you are considering giving away confidential information," said Kirk Loevner, director of Apple's developer services.

Both companies pledged in the letter to strengthen security procedures. While the letter said Apple has identified an unnamed RasterOps employee as responsible for the leak, no mention was made of any punitive action toward RasterOps or the employee.

Dan Ruby, editor of MacWEEK, said the publication cannot confirm or deny whether RasterOps was indeed the source of the information. □

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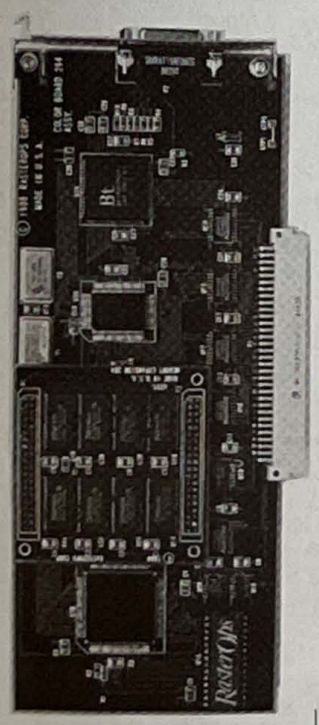

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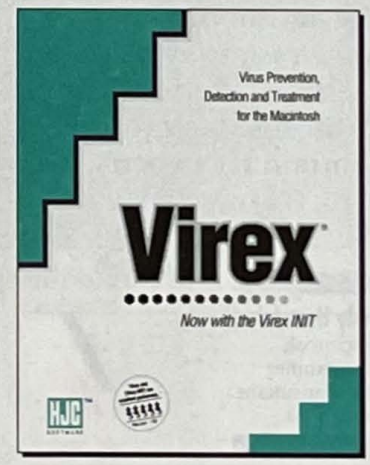

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Earnings

From Page 1

Sales of the low-end Mac Plus and Apple II models declined, the company said, while sales of the Mac IIcx, IIci and SE/30 increased. Sculley also said the Mac Portable was "supply-constrained throughout the quarter."

Apple warned analysts in mid-December to expect disappointing results. At the time, the company said it had not seen sales increase as much as it had anticipated during the holiday season.

"It was better than most people expected," said Doug van Dorsten, a stock analyst at Shearson Lehman Hutton in Larkspur, Calif. Apple's sales will remain flat through the quarter ending March 30, van Dorsten said, but should pick up the second half of the year when new products are expected to be released and when recently announced cost-control measures take effect.

"The good news is that gross margin was up to 52 percent," said Peter Rogers, an analyst with Robertson Stephens & Co. of San Francisco, who stuck by his earnings projections of $3.75 to $4 per share for fiscal 1990. □

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Motorola

From Page 1

can be optimized to take advantage of new features within six months.

The 68040, for which Motorola announced specifications last March, has been endorsed by a number of workstation and personal computer vendors. Apple has said that it will build machines based on the new microprocessor, but has not revealed when such products will be available.

"Apple typically does not move quickly with new products, so it's questionable if we will see [an '040-based Mac] in 1990, but we should see one in 1991," said Slater. "When that happens, it should easily double the performance of the fastest 68030 Mac."

Mark Orr, Apple's product line manager for high-end Macintosh CPUs, said that the 68040's performance and compatibility with previous generations "validates our choice of the 68000 family. We can run all our software much faster. And we think it will stimulate development of even more compelling software from third parties."

Described by Motorola as a revolutionary stage in microprocessor development, the '040 is a complex instruction set computing chip that boasts 1.2 million transistors, whereas the '030 has approximately 320,000. In addition, the '040 features a built-in floating point processing unit, an integer processing unit and two memory management units for instructions and data (see MacWEEK, April 4, 1989).

"We designed the 68040 from the ground up to provide system performance, not benchmark performance," said James T. Reinhart, Motorola's manager for the 68000 microprocessor family.

Reinhart said that this emphasis on system performance prompted such architectural features as instruction and data caches that store 4 Kbytes of information in physical address space rather than in logical space, dramatically reducing the time-consuming need to flush the cache during fetch cycles. In addition, the 68040 relies heavily on parallelism, allowing up to six instructions to be processed in one clock cycle. A new snoop control feature monitors cache access to prevent conflicts between the caches and main memory.

Sample shipments of its 25-MHz 68040 will begin late in the first quarter, Motorola said. □

How the Motorola 68040 compares

	Motorola 68040	Sun SPARC	Intel 80486
Mips at 25 MHz	20	18	15
Mflops at 25 MHz	3.5	1.2	1
Price	$795	$1,735	$950
Cost per mips	$39.75	$96.39	$63.30
Chips required for system	1	More than 5	1

All performance figures claimed by manufacturer

Silicon Beach

From Page 1

tion as a software publisher of the first rank," Cline added.

Other Mac developers may be less than pleased about the proposed acquisition, however. "This will give Aldus more Mac products than any other leading vendor. It puts a lot of pressure on Claris Corp. and other top Mac vendors," said Tony Bove, editor of Bove & Rhodes Inside Report of Gualala, Calif.

The sale could offer multiple benefits to Silicon Beach, including a broader distribution network, additional financial resources, enhanced customer support, and the possibility of expanding into international markets and into the IBM PC market, analysts said.

Ash Jain, publisher of Macintosh Market Report of Irvine, Calif., estimated that Silicon Beach's price tag is about $25 million. According to Aldus, the acquisition would be done as a stock swap, giving Charlie and Hallie Jackson, founders and principal owners of Silicon Beach, about an 8 percent to 10 percent share of Aldus.

Silicon Beach, once a funky start-up run out of the Jacksons' home, had revenues of $10.7 million last year. The Jacksons started the company in 1985 with $35,000 of their own and friends' money.

Aldus and Silicon Beach will now enter a phase called due diligence, during which Aldus will look more closely at its prospective acquisition from technical, financial and marketing perspectives, Aldus said. "I expect due diligence will last six to eight weeks and after that there's a better-than-average chance the acquisition will go through," said Bruce Lupatkin, senior technology analyst at San Francisco-based Hambrecht & Quist. □

PageMaker

From Page 1

February announcement and first-quarter release for PageMaker 4.0.

Aldus PageMaker Color Extension, currently sold as a $195 add-on module, will be folded into the product, several beta users said.

The new version will address a longstanding PageMaker limitation, the absence of built-in word processing. In addition to search-and-replace and spell checking functions, Version 4.0 will offer a pop-up window called a Story Editor for text editing, a beta user said.

Another new feature will enhance PageMaker's applicability for workgroup publishing. If the original word processing or graphics files used in a PageMaker document have been changed, Version 4.0 will reportedly offer users the option of automatically flowing in the modified versions.

PageMaker 4.0 will be better able to handle longer documents and will let users link several files. However, the program will still be unable to open multiple documents simultaneously. Other shortcomings that will remain, users said, include limited line-width and tint options.

Graphics can be tied to text so that they can be moved together, a beta user said. A line-check feature will flag widows, orphans, lines that couldn't be hyphenated according to user specifications, and lines for which the word spacing algorithm could not be met.

Other new features include enhanced typographic controls, table of contents generation, "excellent" indexing with multiple levels and styles, and rotation of text in 90-degree increments, sources said. □

Version 2

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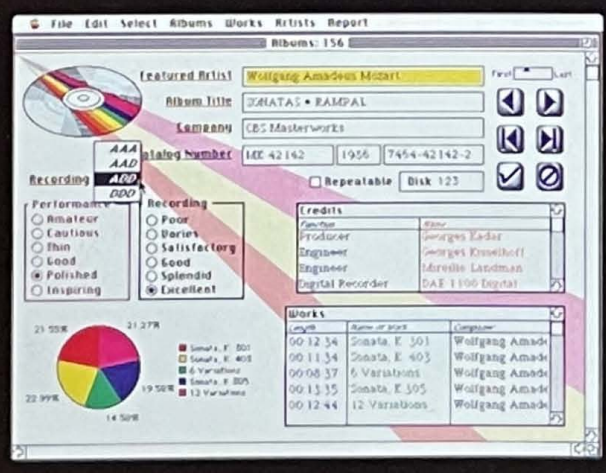
- Parameter passing
- Local and global variables
- True one and two dimensional arrays
- 32,000 variables and arrays
- Pointers to data objects
- If and Case tests
- 3 loop structures: For, While, and Repeat
- Extensible with external procedures
- Asynchronous communication via serial ports

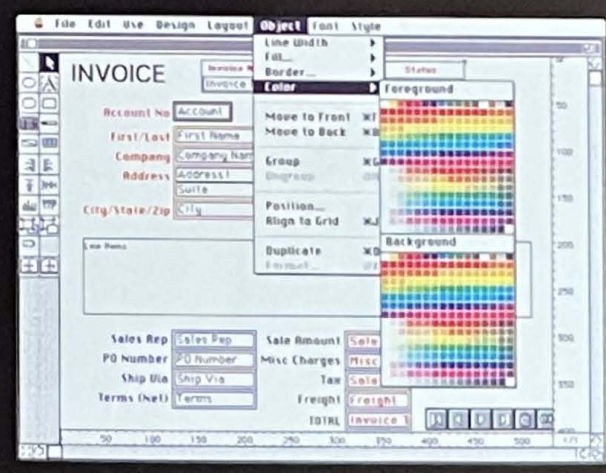
System Requirements

- Macintosh Plus, SE, SE/30, II, IIx, and IIcx
- Hard disk required
- AppleShare and MultiFinder compatible
- 1 MB of RAM

Specifications

- 100 files
- Up to 16 million records per file
- Up to 1 billion characters per record
- Unlimited relations between files
- 511 fields per file
- 9 field types: Alpha, Text (up to 32,000 characters), Integer, Long Integer, Real, Date, Time, Boolean, and Picture
- 32,000 indexes
- 32,000 passwords
- 32,000 layouts
- 32,000 procedures
- 32,000 custom menus





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patrick chédal

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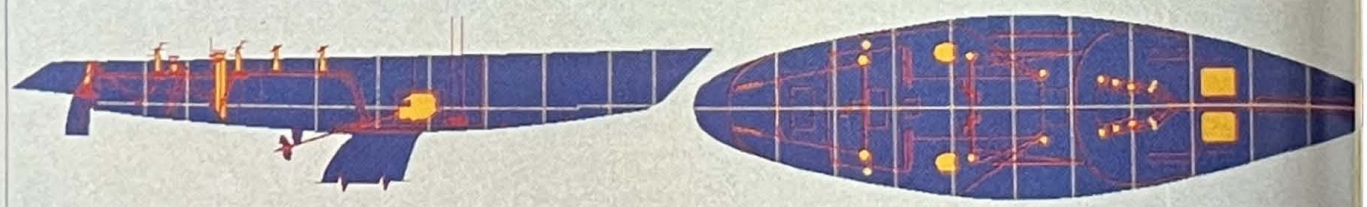
HULL

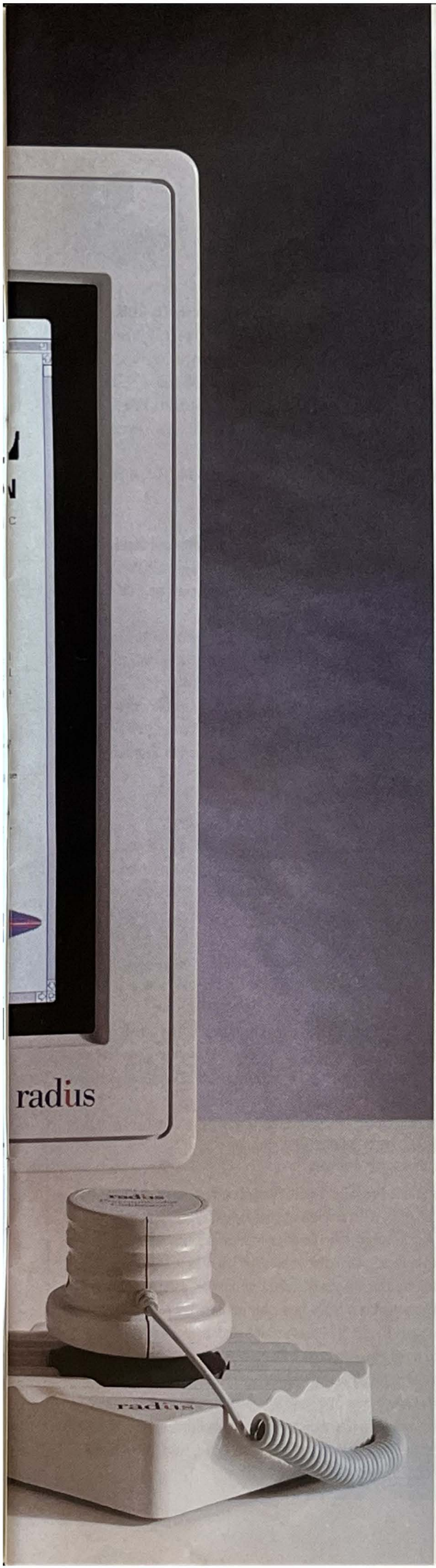
DESIGN

Getting ready for this year's BC Challenge, the single-handed race around the world, is world famous sailor Brian Osborne. Osborne, who skippered *Wednesday's Dream* in her clipper ship record-breaking dash around Cape Horn several years ago, plans to race a brand new, single-handed racer named *Sunday's Victory*. This high-tech racer has undistorted circular hull sections which enable the boat to plane easily at any angle of heel. Its heavily cambered deck is low to the water. Even the hull-deck joint is rounded for reduced windage. This innovative design goes beyond the hull



Page 1

PANTONE Color Specifier



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Radius PrecisionColor Calibrator

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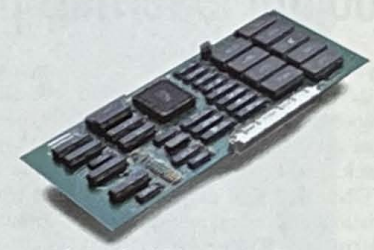

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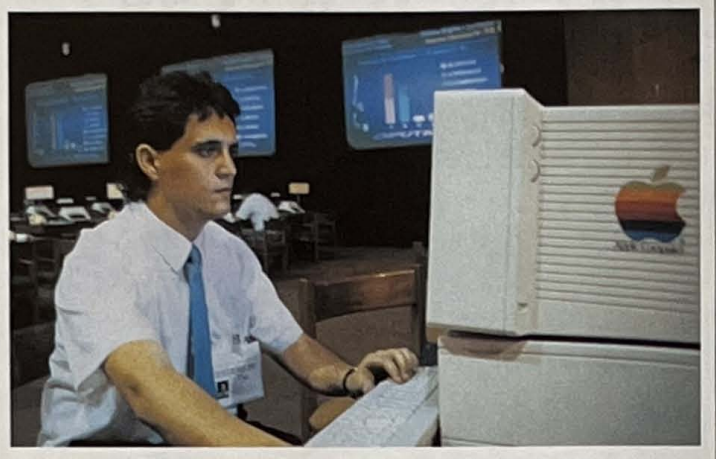
Macs brighten up Chilean election

By Reese Erlich

Santiago, Chile — Millions of Chileans turning on their televisions last month to monitor the outcome of the country's first free elections in 19 years saw Apple's rainbow logo dissolve to reveal a rich array of charts and maps, all generated by a network of high-powered Macs.

"Like everyone else in the world, we recognize the incredible graphic capabilities of the Macs," said Rene Riveros, general coordinator of vote counting. "So when we wanted graphics for our giant-screen projections and for transmission to TV stations, there really wasn't any other choice."

The vote counting system used for the Dec. 14 elections combined computer technology with old-fashioned methods. Workers in each precinct counted votes by hand and then faxed or phoned the results to a regional center. In the bigger cities, these centers then transmitted the results via modem to the computer center at the Ministry of the Interior here at the Moneda Palace, Chile's White House.



Macs in the press center were connected to official election headquarters in Chile's Moneda Palace. As election results were received, Mac operators turned them into colorful graphics.

At the palace, three IBM 43XX mainframes were connected to three MS-DOS machines used as gateways, 15 other IBM PCs and a 3Com server. The network was linked via Ethernet and 3Com Corp.'s 3+Share to the press center several miles away, where 18 Mac IIcx machines with 8 Mbytes of RAM each, two LaserWriters and five Sony projection systems were installed.

Specialists from the Catholic University of Chile here had spent months designing and setting up the network for the big night. At the press center, specially trained operators used Microsoft's PowerPoint, Informix Software's Wingz, Silicon Beach Software's SuperPaint and MacroMind's MacroMind Director to convert the latest tallies from presidential, senatorial and House of Deputies elections into full-color Mac graphics.

About every two hours a spokesman for the Ministry of the Interior announced the latest returns. Soon afterward, a special coaxial cable carried the Mac-generated graphics directly to TV stations broadcasting live from the hall.

All of the country's political parties and foreign observers declared the elections accurate and clean.

"It's incredible that such a complicated computer system functioned without problems," said Mac operator Freddy Pacheco. "This was a great night not only for Chilean democracy but for our Macs as well." □

Boojum externals process arrays

By Raines Cohen

Silver Spring, Md. — Boojum Computer Systems Inc. last month began shipping HyperExternals IV, a package of external functions (XFCNs) that add mathematical, statistical and array manipulation abilities to HyperCard. Stack developers can use the functions to perform elementary array processing within their stacks.

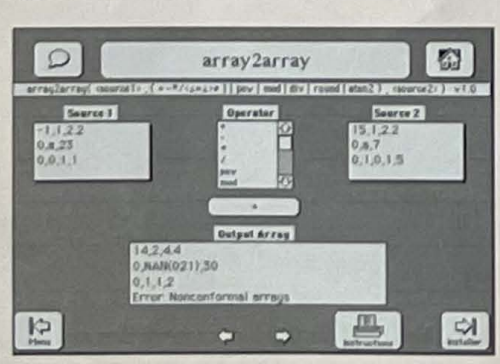
The product's 14 XFCNs include routines to compute simple statistics and apply numerical, trigonometric, exponential and algebraic operations to arrays. Matrix creation, inversion, multiplication and transposition are supported as well as line fitting and linear equation solving.

HyperExternals IV is the fourth in a series of packages of external commands and functions from Boojum. The company's previous three products contain routines to perform system functions and manipulate strings, columns of data, and files from within stacks. One unique external in Volume II is a Soundex routine, which codes data to allow it to be searched without knowing the exact spelling. Volume III includes a set of externals to slow down HyperCard to the speed at which it runs on a Mac Plus, for compatibility testing.

Joe Caldarola, president of Hermeneutical Securities, a San Francisco consulting firm, is a long-time user of Boojum's HyperExternals products. "Their sort and their find are the fastest out there," he said. "They are incredibly durable, with very solid parameter parsing and always a graceful exit. If anything, the options are sometimes too powerful, and I have to pass up portions to focus on the task at hand."

Like each previous volume, HyperExternals IV sells for $25. The price includes unlimited telephone and electronic-mail support, as well as free licensing for in-house use or commercial resale.

Boojum Computer Systems Inc. is at 15004 Donna Drive, Silver Spring, Md. 20905; (301) 989-9708. □



Boojum's HyperExternals IV, a package of 14 HyperCard XFCNs, gives stack developers the ability to add basic array processing functionality to their stackware.

New Rodime driver

Boca Raton, Fla. — Rodime Systems last month released a driver that dramatically improves the performance of its Cobra series of 3.5-inch drives, the company said.

The proprietary software, Cobra Driver Utility 1.03, incorporates a new algorithm that makes better use of the cache built into the 45-, 70-, 100- and 210-Mbyte SCSI drives, the company said. In SCSI Evaluator tests measuring transfer times on 50- to 100-Kbyte reads, Cobra 45e outperformed leading competitors in the same capacity range by a factor of 40 on average, Rodime said. (Tests were conducted on a Mac IIci, Rodime said; competing drives were clocked with "generic drivers.")

The software is now being shipped with all Cobra drives. Present owners can upgrade by returning their driver disks with a self-addressed, stamped disk mailer.

Rodime Systems is at 901 Broken Sound Parkway N.W., Boca Raton, Fla. 33487; (407) 997-0774. □

News BRIEFS

Discwasher laser-lens cleaner kit washes dusty CD-ROM players

Schiller Park, Ill. — Discwasher Inc. last month introduced CDL 2, a new laser-lens cleaner kit that could provide a solution to the dust problem plaguing many owners of the AppleCD SC, Apple's $1,199 CD-ROM player (see MacWEEK, Nov. 21, 1989).

The Discwasher kit, which works with both CD-ROM and audio CD players, is available for $27.95 at most locations where CD products are sold, the company said. Replacement cleaning pads and solution cost $4.99.

Discwasher Inc. is located at 4310 Transworld Road, Schiller Park, Ill. 60176; (708) 678-9600.

Alisa ships gateway linking QuickMail, DECnet mail services

Pasadena, Calif. — Alisa Systems Inc. last month shipped MailMate/QM, a gateway between mail services running on Digital Equipment Corp.'s DECnet and QuickMail, CE Software Inc.'s electronic-mail package.

MailMate/QM, priced at $950 for a 10-user package, links QuickMail users to colleagues using VMSmail, All-In-1, TSSnet NetMail or any foreign mail systems supported by DEC's message router, such as IBM PROFS and X.400.

QM-Link Gateway, a QuickMail bridge that connects to AppleLink, has been updated. The new version is available on AppleLink, Apple's on-line service.

Alisa Systems Inc. is located at 221 E. Walnut St., Suite 175, Pasadena, Calif. 91101; (818) 792-9474.

Personal Phone 1.1 simplifies AppleTalk 'dialing'

Hampton, Va. — The Personal Software Development Corp. last month released an updated and repriced version of Personal Phone, an interactive network communications utility that uses a telephone metaphor and even digitized phone sounds.

A combination Startup document (INIT) and desk accessory, Personal Phone (formerly AS&M Phone) lets users "dial" colleagues over an AppleTalk network, even across multiple zones. Files can be transferred in the background in either direction while users "chat" by entering and reading text in a split-screen window (see MacWEEK, April 11, 1989).

Version 1.1, a free upgrade for registered owners, reduces the number of steps involved in placing and answering "calls" and improves performance over slow networks, the company said. Personal Phone is now priced at $99 for a five-user license and $169 for a 10-user package. A demonstration version is $5.

The Personal Software Development Corp. is located at 22 Natalie Drive, Hampton, Va. 23666; (804) 898-3541.

Page Studio Graphics' FindPIXymbols offers Key Caps alternative

Chandler, Ariz. — Mac font fans who find Apple's Key Caps desk accessory inadequate for their font management needs can now turn to a more sophisticated alternative offered by Page Studio Graphics, a developer known for its line of PIXymbols PostScript picture fonts. The new DA, called FindPIXymbols, displays single or multiple characters from standard or picture fonts in any size up to 127 points and shows complete fonts in 10-, 18- or 24-point sizes in a scrollable grid. A character can be selected by typing it, entering its ASCII number or clicking on it in the grid, and it can then be copied for pasting into many applications.

The new DA, written for Page Studio by shareware programmer Jeff Shulman, is now bundled with all 34 PIXymbols font packages and offered separately for $20.

Page Studio Graphics is located at 3175 N. Price Road, Suite 1050, Chandler, Ariz. 85224; (602) 839-2763.

D E S K T O P V I D E O

"ColorCapture lets you create exciting videographics on your Mac II, then output to videotape."

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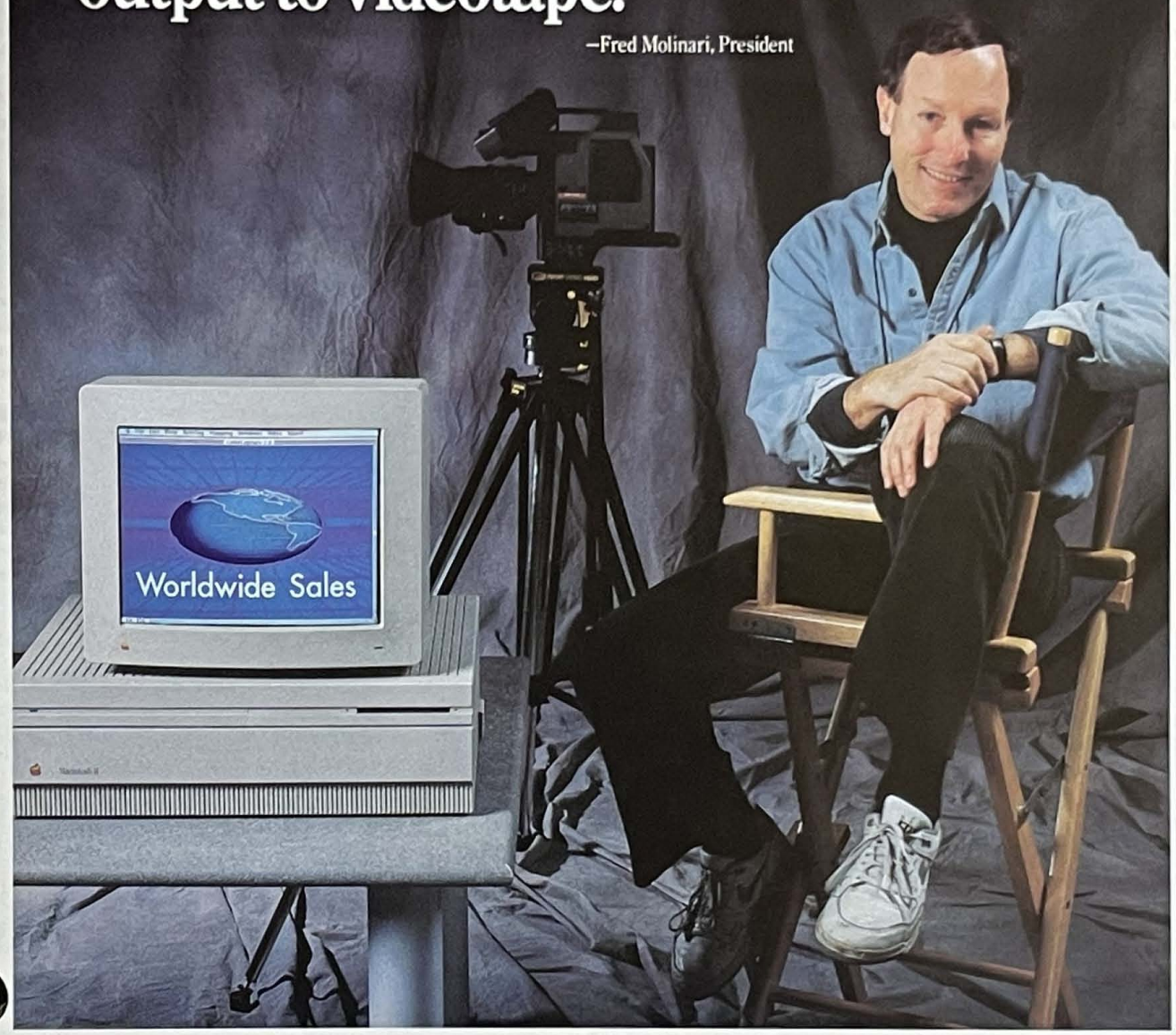

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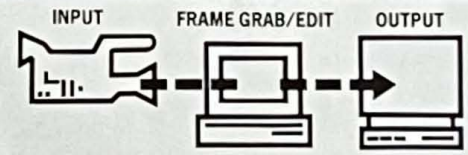

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New entrants in optical market

By Pamela Pfiffner and Henry Norr

San Francisco — Betting that the large capacity, security and convenience of removable-disc rewriteable optical drives will hold increasing appeal for storage-hungry Macintosh users, more vendors have in recent weeks thrown their hats into the magneto-optical ring.

All of the latest entrants use Sony drive mechanisms, boasting a capacity of at least 594 Mbytes per disc (297 Mbytes per side), average access times of about 95 milliseconds and data transfer rates of about 650 Kbytes per second.

▶ MicroNet Technology Inc. this month began shipping the Micro/Optical, its $5,295 version of the new storage technology. Users who want more speed and extra capacity can use MicroNet's driver software to splice two of the optical drives into a single logical volume. According to Charles McConathy, company president, that technique cuts access time in half and increases the data transfer rate by about 30 percent.

▶ Micro Design International Inc. has introduced the LaserBank 600R for the Mac. Available from value-added resellers (VARs) and direct from Micro Design, it is priced at $5,495. The company, which has marketed optical storage systems for platforms from IBM, Digital Equipment Corp. and Sun Microsystems Inc. since 1985, also offers jukebox systems and software for converting file formats across platforms.

▶ Conversion Dynamics Inc., a systems integrator and software developer, calls its version of the Sony drive the Optirase. The drive, available now, is priced at $5,895. According to Conversion Dynamics, the unit is being sold in the government market by Falcon Microsystems Inc., which lists it on its General Services Administration schedule.

Two other vendors, like several other earlier entrants in the magneto-optical field, have recently released otherwise similar systems that offer users an optional higher-capacity format. The alternative provides a total capacity of 650 Mbytes, storing 1,024 bytes per sector, in contrast with the 512-byte sectors used in the 594-Mbyte format and standard Mac disk formats:

▶ Ocean Microsystems Inc. calls its implementation the Tidalwave 650. Available now from VARs or direct from Ocean Microsystems, the drive is priced at $5,390 plus $495 for a Macintosh interface.

▶ Accel Computer Corp.'s Optical Disk Drive, priced at $5,990, is available now to systems integrators and OEMs. It will be marketed directly to end users under the Accel name starting later this quarter, the company said.

MicroNet Technology Inc. is located at 20 Mason, Irvine, Calif. 92718; (714) 837-6033.

Micro Design International Inc. is located at 6985 University Blvd., Winter Park, Fla. 32792; (407) 677-8333.

Conversion Dynamics Inc. is located at 1200 Corporate Drive, Suite 150, Birmingham, Ala. 35242; (205) 991-8338.

Ocean Microsystems Inc. is at 246 E. Hacienda Ave., Campbell, Calif. 95008; (408) 374-8309.

Accel Computer Corp. is located at Von Karman Commerce Center, Suite 110, 17145 Von Karman Ave., Irvine, Calif. 92714; (714) 757-1212. □

MicroNet offers digital audio tape

In addition to delivering its new rewriteable optical drive, MicroNet Technology Inc. this month branched out to yet another emerging storage technology, digital audio tape.

The new Micro/DAT, priced at $4,295, can store up to 1.3 Gbytes of data on a shirt-pocket-size cassette at a rate of up to 10 Mbytes per minute, the company said. Based on a 5.25-inch half-height Wang-DAT mechanism, the helical-scan system features read-after-write verification and an average access time of 20 seconds (relatively fast for large-capacity tape technologies). It uses the DDS (Digital Data Storage) format, a standard developed by Hewlett-Packard Co. and Sony Corp. to ensure interchangeability of data among compliant DAT drives.

Retrospect, the $295 archiving and backup program from Dantz Development Corp. of Berkeley, Calif., is bundled with the Micro/DAT. Version 1.1, released earlier this month, adds support for DAT and improves background performance under MultiFinder (see MacWEEK, Jan. 9).

MicroNet, a company that specializes in high-capacity, high-performance storage systems for the Mac, reported a 500 percent increase in sales for 1989, its second year of existence. — *By Henry Norr*

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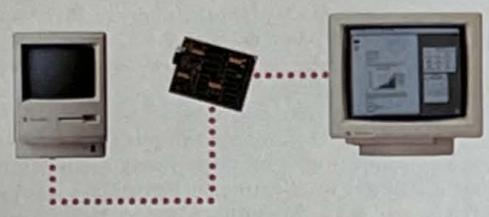

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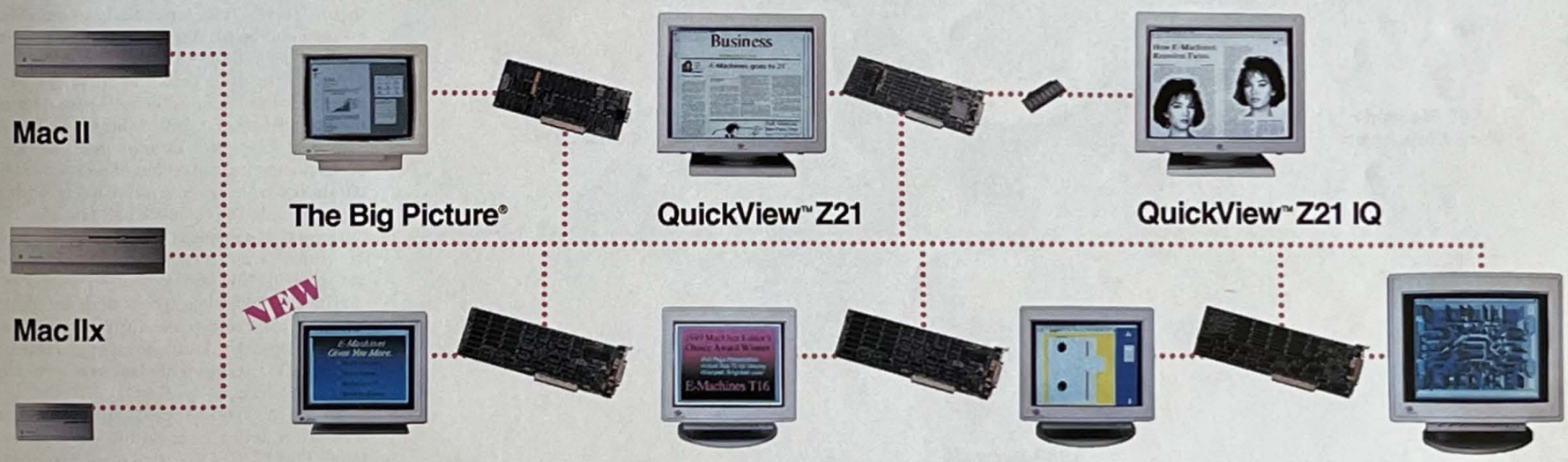

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LaserMAX offers 1,000-dpi output

$7,995 desktop device prints on plain paper

By Pamela Pfiffner

Eden Prairie, Minn. — LaserMAX Systems, a division of Lasermaster Corp., last month began shipping a plain-paper printer that the company said brings typeset-quality output to the desktop.

Boasting an effective resolution of 1,000 dpi, the $7,995 LaserMAX 1000 printing system consists of a printer based on a Canon SX engine. The system offers a resolution of 1,000 vertical by 400 horizontal dpi; a NuBus printer controller; and TurboRes, a proprietary software program that further enhances the printer's horizontal resolution, the company said.

Although the printer's vertical resolution is fixed, TurboRes fools the system into printing partial pixels, the company said. According to LaserMAX, this technique increases the effective horizontal resolution to 1,000 dpi without affecting character width.

TurboRes also improves the effective resolution of text and filled polygons, although it does not affect bit maps, such as TIFF files or most Encapsulated PostScript files, the company said. On those files the printer defaults to its native 1,000-by-400-dpi resolution.

LaserMAX 1000 includes 35 Bitstream fonts. An upgrade to support Adobe Type 1 fonts will be available free to registered owners in March.

The system features an advanced font scaling technology the company said is compatible with the printing architecture slated for System 7. LaserMAX said it will provide another free upgrade when the new system and Apple's Royal font technology are released.

Although the LaserMAX 1000 can use the same toner cartridge as the Apple LaserWriter II, LaserMAX has developed a $195 cartridge called the TurboToner, which offers heavier blacks and has a longer life, according to the company.

In a related development, Falcon Microsystems Inc. of Landover, Md., has agreed to distribute the LaserMAX 1000 system and other LaserMAX products. Falcon is Apple's primary distributor to the federal government.

LaserMAX Systems is located at 7150 Shady Oak Road, Eden Prairie, Minn. 55344; (612) 944-9085. □

Fairfield macros give 'big 3' spreadsheets access to host data

By John Battelle

Fairfield, Iowa — Fairfield Software Inc. has shipped macros for each of the "big three" in the Mac spreadsheet market, evening out the playing field among the three competitors in terms of host connectivity.

Access to data residing in large host databases has become the latest weapon in the spreadsheet war, with Ashton-Tate Corp., Microsoft Corp. and Informix Software Inc. each announcing some kind of access to SQL databases from their spreadsheets within recent months (see MacWEEK, Jan. 16).

Hoping to capitalize on the fact that none of those announced connections has yet shipped, Fairfield Software is now offering its year-old ClearAccess desk accessory with macros that give each spreadsheet program access to databases supported by Apple's CL/1 connectivity language or to any Oracle database.

As a DA, ClearAccess allows ad hoc database queries from within any application. The ClearAccess Macro Functions Package integrates this ability into Full Impact, Wingz and Excel via each spreadsheet's built-in macro functions. Otherwise carrying a price of $129, the macro package is available free of charge with the purchase of ClearAccess until March 31.

"With the Wingz macros, I can make calls to my Sybase database on a VAX from within the spreadsheet," said David Wunderlich, Mac/VAX strategic analyst at Liberty Mutual in Portsmouth, N.H.

Besides integrating SQL access into spreadsheets, the Fairfield package lets users bring host data into Microsoft Word, using the word processor's mail-merge facility, and distribute it with Microsoft Mail. The company plans to release external commands for HyperCard by the first quarter, according to company officials.

ClearAccess is available now for $329 per copy or $2,799 for 10 copies.

Fairfield Software Inc. is located at 200 W. Lowe, Fairfield, Iowa 52556; (515) 472-7077. □

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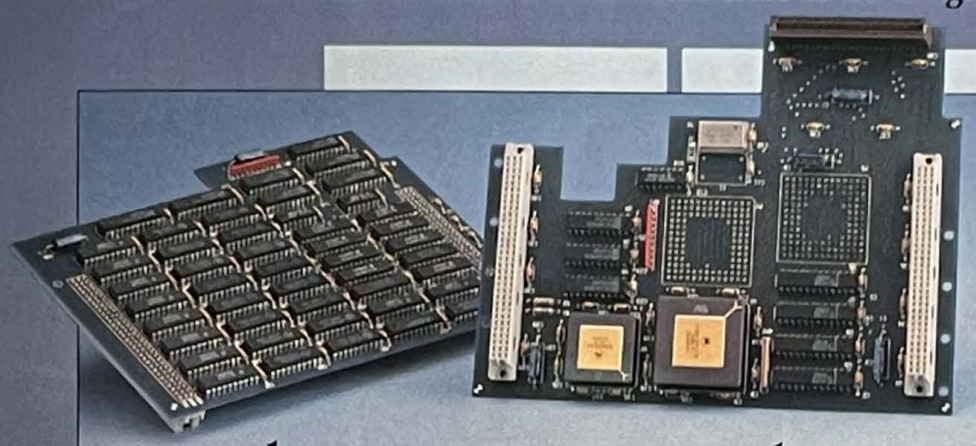

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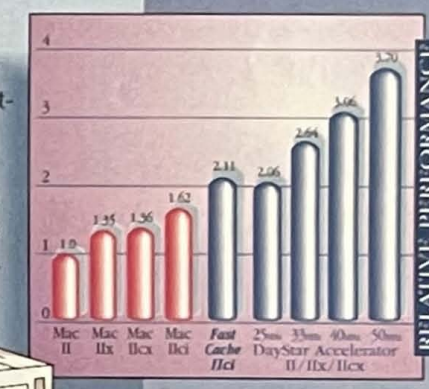
Fast Cache IIci increases Mac IIci processing speed up to 40%



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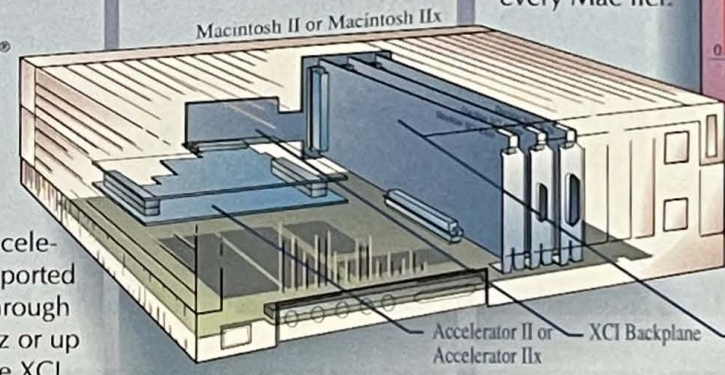

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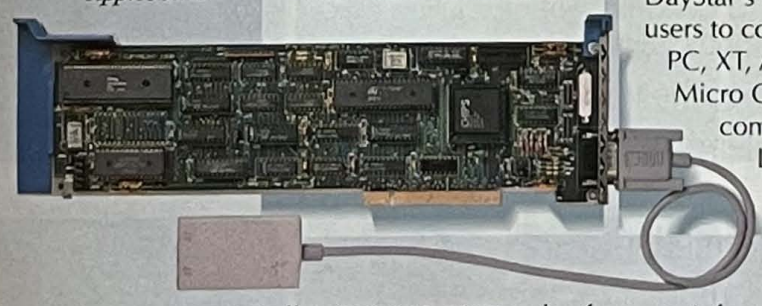

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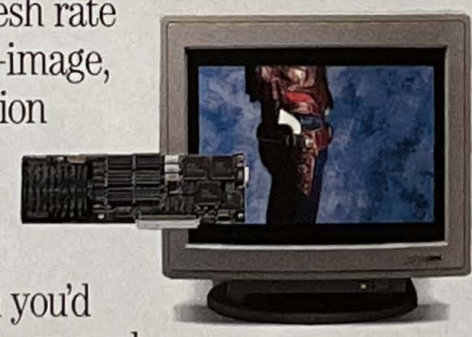
24-Bit Graphics Systems A Looks Are Impressive, B

SuperMac's revolutionary new 24-bit True Color graphics system puts the "quick" back in QuickDraw.

Our Spectrum/24 Series III 24-bit graphics card gives you the fastest QuickDraw acceleration on the planet—making painfully slow QuickDraw operations up to 25 times faster. In fact, some operations in 24-bit mode (like scrolling and screen-fills) are now faster than in 8-bit mode. Some are even as fast as in one-bit mode.

And we accelerated QuickDraw on every Series III 24-bit graphics card—because we consider it a necessity, not an accessory. It's plugged right onto the board, at no extra cost. So it's the only single-slot True Color solution that saves you power and money, as well as time.

And when it comes to looks, there's nothing more impressive than the super-sharp, flicker-free image of our new 19″ Trinitron and other color displays. With their 75 Hz refresh rate and Apple-standard 72 dpi WYSIWYG screen-image, True Colors never looked better—all 16.7 million of them. We can even give you accelerated QuickDraw for your Apple 13″ monitor with our new, low cost ColorCard/24.



All in all, it's just the kind of innovation you'd expect from the company that invented large screen color for the Macintosh.

So mosey on in to your local dealer and try your hand at accelerated QuickDraw. Ask for a showdown between our Spectrum/24 and any other 24-bit graphics system your dealer can round up.

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re A Lot Like Gunslingers.
ut Speed Is Everything.

Images shown are actual screen-images photographed directly from a SuperMac 19" display. Original photography was scanned with a Barneyscan 24-bit scanner into PixelPaint Professional running on a Macintosh IIx equipped with a Spectrum/24 Series III graphics card.

Monitor makers ring in new year

Market leaders add 8-, 24-bit options

By John Battelle and Rochelle Garner

San Jose, Calif. — Three of the leading players in the Macintosh monitor market this month added new options to their display product lines.

▶ Radius Inc., fresh from introducing a new 21-inch gray-scale monitor earlier this month, last week introduced the DirectColor/8 Interface board, a new-generation eight-bit video board that supports the company's 19-inch color displays and can be expanded to 16 or 24 bits. The $2,095 board offers a resolution of 1,152 by 882 pixels at 82 dpi, providing 30 percent more work space than most 19-inch monitors and making possible a complete view of two pages. The card incorporates 1 Mbyte of high-speed video RAM and provides a 71-Hz refresh rate.

The DirectColor can be upgraded to 16-bit color by adding a $1,095 Radius DirectColor Memory Expansion Kit or to 24-bit color by adding two of the kits. Distinguishing its upgrade procedure from what it called "pseudo upgrade programs" offered by competitors who require users to turn in their older boards to move up to true color, Radius noted that its new board can be upgraded at any time by authorized Radius dealers.

The board, due out this month, also can be used as a one-bit black-and-white or eight-bit gray-scale display. The company's standard eight-bit gray-scale and color board, the GS/C Interface, remains on the market as a lower-cost alternative for users who don't plan to move to 24-bit color.

As of last week, the company also cut the price of its 24-bit video interface, the DirectColor/24, to $4,095, an 18 percent reduction.

▶ RasterOps Corp. introduced gray-scale two-page display systems for the Macintosh II line and the SE/30. The ClearVue/GS and ClearVue/GS/30 both display up to eight bits (256 shades) of gray on a 19-inch monitor with a resolution of 1,024 by 768 pixels. Both systems offer a 75-Hz refresh rate, two- and four-times magnification, hardware pan and zoom, virtual desktop, pop-up menus, and a one-year warranty.

Both the ClearVue/GS and ClearVue/GS/30 are available now for $2,195.

▶ E-Machines Inc. announced a pair of true-color systems for the Mac II line. The new T19/24 uses E-Machines' 19-inch Trinitron monitors, while the TX/24 includes a 16-inch Trinitron. Both support 32-bit color and offer a resolution of 1,024 by 808 pixels, but the TX/24 packs in 85 dpi, while the larger T19/24 offers 76 dpi.

Both systems sport a 72-Hz refresh rate and can be set to one, two, four, eight or 16 bits per pixel when the full 24 bits for true color are not required. The new systems are due later this quarter. The TX/24 is priced at $6,495, and the T19/24 is $8,195.

Radius Inc. is located at 1710 Fortune Drive, San Jose, Calif. 95131; (408) 434-1010.

RasterOps Corp. is at 2500 Walsh Ave., Santa Clara, Calif. 95051; (408) 562-4200.

E-Machines Inc. is at 9305 Gemini Drive, Beaverton, Ore. 97005; (503) 646-6699. □

LAPCAD's finite element modeler adds support for PICT

Chula Vista, Calif. — LAPCAD Engineering is now offering Version 3 of LapCADII, a $395 finite element modeling program.

With LapCADII, engineers can create 3-D meshes that can be used directly in finite element analysis programs such as MSC/pal, MSC/pal 2 and MSC/NASTRAN from The MacNeal-Schwendler Corp. of Los Angeles.

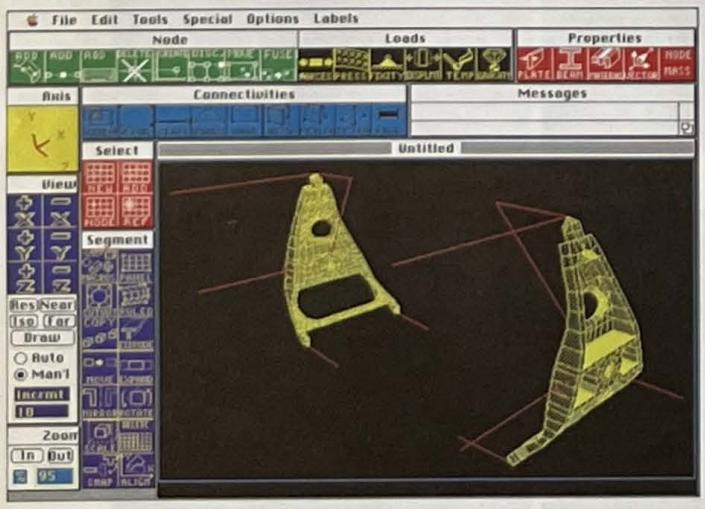
Features added to the new version include:

▶ Support for up to 5,000 grid points, allowing users to create larger and more-complex models.

▶ Support for the PICT format, permitting designs to be imported from all CAD applications that support the Macintosh graphics file format.

LapCADII requires 2 Mbytes of memory.

LAPCAD Engineering is at 1568 Diablo Point Court, Chula Vista, Calif. 92011; (619) 421-1236. □



LapCADII, at $395, understands the physical properties of the structure being modeled. Models created by LapCADII can be read by a variety of finite element analysis programs.

MacMasterLink accesses Unisys mainframes

By John Battelle and Henry Norr

Richmond, Va. — Performance Software Inc. this month began shipping MacMasterLink/1100, a new version of its Macintosh-to-mainframe file transfer software that works with Sperry Unisys 1100/2200 mainframes.

Company officials said the new release was spurred by the increasing number of Macs in government offices, many of which use Sperry mainframes.

MacMasterLink/1100 will support many methods of connection, including asynchronous protocol converters, most terminal emulation boards, asynchronous TTY for file transfer, and connections across a LocalTalk LAN.

Larry Seerden, a Computer Science Corp. staff scientist assigned to support the Navy's Pacific Missile Test Range in Camarillo, Calif., said the new Performance product gives the range's Macs access to test data stored on the range's Unisys 1173 mainframe, putting them on equal footing with the Navy's Unisys and Zenith IBM PC compatibles. "Until now," he said, "the only way we could do it was to download the data to the PCs, copy the file to a floppy and walk it over to the Mac, so this is a big help for us."

MacMasterLink/1100 requires a $4,995 software package installed on the host. Mac support costs $995 plus $100 per connected Mac.

The original MacMasterLink supports Macs attached to IBM mainframes through asynchronous protocol converters or 3270 terminal-emulation boards.

Performance Software Inc. is at 575 Southlake Blvd., Richmond, Va. 23236; (804) 794-1012. □

Editorial

Keeping secrets is no service to readers

MacWEEK does not ordinarily use this space to defend its reporting methods, but last week's "Open Letter to the Apple Community" from Jean-Louis Gassée, president of Apple Products, and Kieth Sorenson, president of RasterOps Corp., requires a response.

The letter concerned an agreement between the two companies about security issues raised by the publication in MacWEEK of a photograph of and details about the Mac IIci. The letter charges that an individual at RasterOps was the source of the information and outlines measures the companies have taken to prevent future leaks.

All of this is perfectly fine. Apple should take whatever measures it can to release information in the manner it deems most favorable. What rankles, however, is the rationale for secrecy provided in the letter: "Keeping proprietary and confidential information secret is the key to moving the computer industry into the 21st century."

The implication is that MacWEEK, by publishing an accurate description of a new computer model seven weeks before its introduction, has somehow erased Apple's competitive advantage and impeded its progress toward the next century.

That, of course, is nonsense. MacWEEK publishes articles about unreleased products because it is part of our charter to help computer managers make wise purchasing decisions. One way we serve our readers is by providing accurate information about future product releases from Apple and other companies. This information helps them plan their computer purchasing and implementation strategies.

Most of the time, such articles help build enthusiasm for the future products. Occasionally, however, they may dampen demand for existing products, as our IIci story may have done for the Mac IIcx.

We understand Apple's concern about such stories, and we support whatever reasonable measures it takes to protect its information. MacWEEK's first responsibility, however, is to serve the legitimate information needs of its readers.

We wish Apple well in this century as well as the next. We also wish Macintosh users and managers well, and we will continue to serve them by writing and publishing factual articles about future products. □

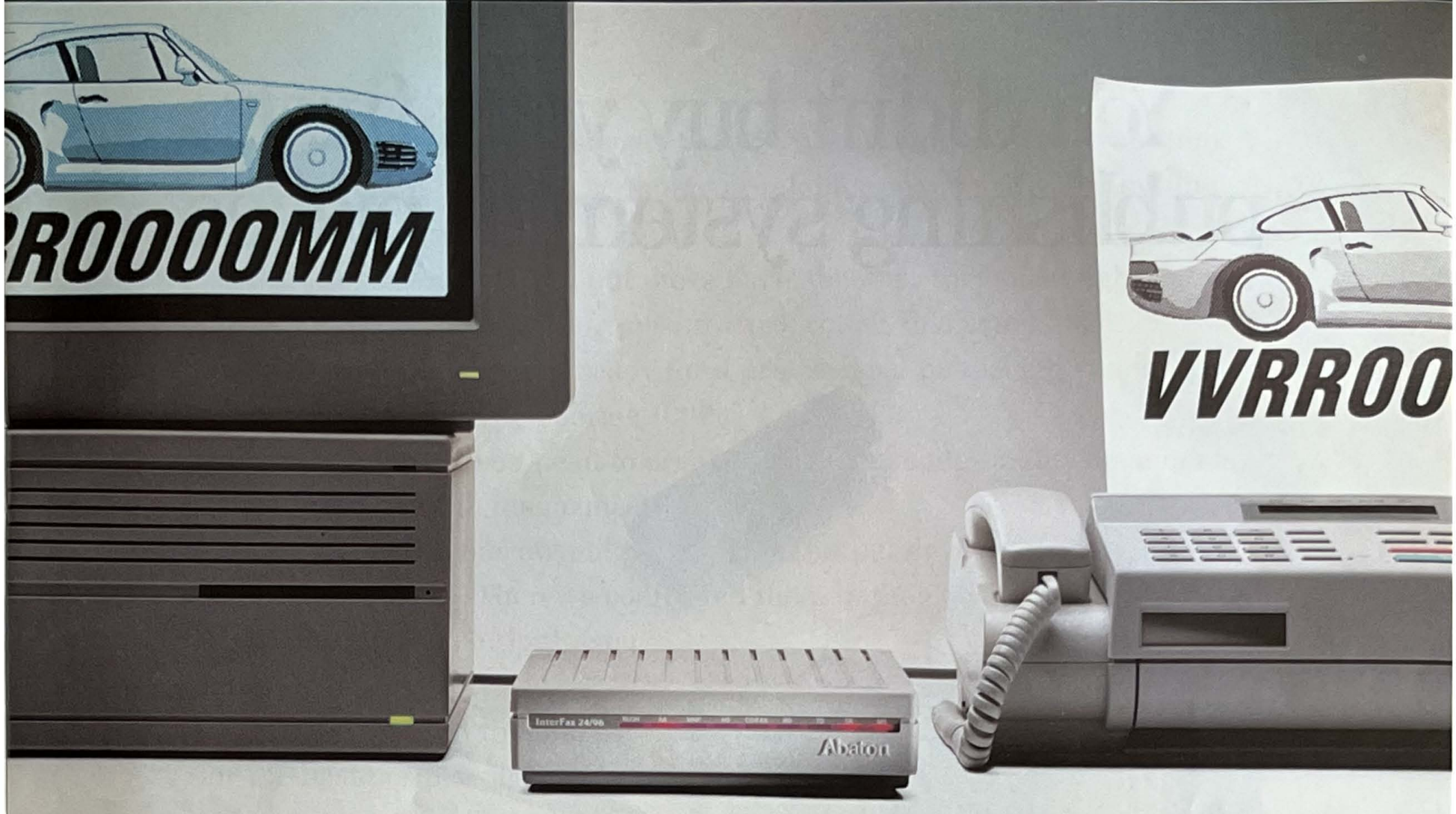
A modest proposal: 'Headless' SE/30

As Apple moves to respond to lagging sales, we'd like to offer a modest proposal of our own, one we think could benefit both the company and its customers in a matter of months. Our suggestion: a "headless" SE/30 priced at $2,495.

Because its logic board and most circuitry would be identical to those of the current 68030-based compact Mac, Apple would need only a new low-profile case for a headless version. That should mean the system could be on the market by the August Macworld Expo, if not sooner, instead of the 1991 date analysts and Apple sources are projecting for a new low-end modular Mac.

The benefits such a machine would offer to users are easy to enumerate: fast performance, full compatibility with System 7.0, and support for a variety of large-screen color and monochrome displays — all at a reasonable price. We think customers who balk at the cost of high-end models but turn up their noses at the aging Plus and SE would come flooding into Apple dealers for a system like that, if priced appropriately.

We have no doubt that the machines reportedly in the Apple pipeline for 1991 will have other advantages, including, perhaps, on-board video and a more modular and therefore less expensive design, and we trust that the company will do what it can to accelerate those projects. But in the interim, a screenless SE/30 could be a quick fix for the problems besetting the company, as well as a major plus for its customers. □



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As an added plus, the new InterFax also works as a 2400-bps Hayes-compatible data modem with MNP 5 error correction, making it a great value. If you want to get from here to wherever with twice the horsepower, call Abaton at *1-800-444-5321*. The new InterFax 24/96 will make your ideas easier to publish. Anywhere.

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Introducing the Interfax 24/96

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And you shouldn't buy your next one in pieces, either. Even if you think you'll save a few dollars by shopping around for components and putting them together yourself.

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Old Macs applied to new uses

As technology marches on, many companies are finding that even their oldest, lowest-level Macs can still lead useful lives.

By Emily Kay

For organizations that have been using Macs for years, there's no such thing as an obsolete Macintosh. It's hard to find a company willing to give up on even the oldest, lowest-level Macintosh. Many companies, for example, are finding that 512K-class machines have a place in some corporate computing strategies.

Approximately 2,300 of Seattle First National Bank's (SeaFirst) 3,400 machines are Mac 512Ks, according to Bob Bowman, vice president and manager of microcomputer support for the Washington bank.

While SeaFirst has made the SE/30 its standard high-end computer and is slowly eliminating the Mac 512K, it has too many 512Ks to be able to ship them all to the computer graveyard. Rather than take a loss, SeaFirst puts them to use and then later sells them to employees.

"The 512K is the bottom of the mainstream products in the corporation," Bowman said. "We've developed a terminal emulator desk accessory, which runs in all the 512Ks and which is the primary use for a lot of those machines."

The low-end machines also can run basic spreadsheet and word processing programs, which Bowman said is "a pleasant add-on."

Eventually, though, SeaFirst sells its 512Ks to employees at book value. The bank breaks even on the deals.

The in-house discount program has been so successful that SeaFirst has a lottery to assure equitable distribution, Bowman added.

Network service. Bob Duthie, president of Duthie Associates Inc., an electronic publisher in Nashville, Tenn., said his 512K is still going strong. Upgraded with an 800-Kbyte floppy disk drive and the same 128-Kbyte ROM used in the Mac Plus, the machine will likely end up as an electronic-mail server, Duthie said. His former employer, Northern Telecom Inc., also used 512Ks as mail and fax servers, Duthie noted.

Many companies' older machines are Mac Pluses. While technology marches past the Plus, those organizations still find uses for the computer.

When a user at GTE Corp. moves up to a Mac II, a first-time Mac user gets the old Plus, said Ray Palkovic, director of information systems technologies at the Stamford, Conn.-based company. Before retiring its Pluses, GTE will use them as print spoolers on LocalTalk networks.

"We're moving into LANs on a big scale, and while the Plus won't be able to participate on the Ethernet side, we're still planning on getting to our laser printers through LocalTalk," Palkovic said. "As part of that, we can take advantage of fully depreciated or obsolete Pluses and use them as print spoolers."

The company may eventually donate the obsolete Macs to charity or sell them outside the organization, Palkovic added, as it did with its obsolete DOS machines.

Rogers Corp. in Mesa, Ariz., uses its one Plus (an upgraded 512K and the company's first Macintosh) as a gateway between its AppleShare network and a numerically controlled machine on the factory floor, said William Paxton, information systems analyst with the electronics component manufacturing firm.

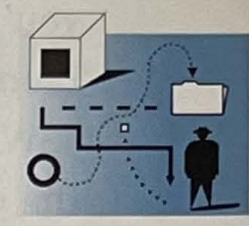
When Paxton's group has no further use for an older Mac, he will try to move it into another division with fewer Macintoshes, to get around the data processing department's anti-Mac bias.

Hitting the wall. Leased Pluses were San Francisco-based Bechtel Corp.'s first Macintoshes. After the Mac became a standard machine, the company bought the leased Pluses for a low price, said Diana Foster, senior analyst in the

See Old Macs, Page 28

DON B. STEVENSON/PICTURE GROUP

William Paxton of Rogers Corp. in Mesa, Ariz., looks for new uses for older Macs, adding RAM in anticipation of System 7.0.



One-minute MANAGER

Maya Computer gives its used Macs a one-year warranty

Waitsfield, Vt. — Managers looking to save money by purchasing used Macintoshes can now get the added benefit of peace of mind with better warranty protection than Apple offers on its new machines, according to Maya Computer Co.

Maya has announced that it will extend the parts-and-labor warranty on its selection of new and used Macs to one year. "When a business buys used Macs, we find that their greatest concerns are quality and dependability," said Jahan Salehi, Maya sales manager. Salehi added that "a big chunk" of his company's business involves filling orders for corporate clients who purchase Macs in quantity.

The savings over buying new machines can add up. For example, Maya sells a used Macintosh SE with a 20-Mbyte hard disk for $1,850, as opposed to the typical retail price of $2,500 to $2,600. A used Mac IIcx with 4 Mbytes of RAM and a 40-Mbyte hard disk, which would sell for $4,490 new, costs $3,895 from Maya.

Maya handles repairs on its Mac computers and Mac peripherals at its headquarters. Most repairs take less than 48 hours, according to the company, and overnight delivery and rush repairs are available at an additional cost.

Maya Computer Co. is located at Bridge Street Marketplace, Waitsfield, Vt. 05673; (802) 496-6982; (800) 541-2318.

Excel conference to highlight multiplatform environments

Redmond, Wash. — Microsoft Corp. will sponsor a series of development conferences for users of its Excel spreadsheet application. The conferences will be held Feb. 5-6 in New York and Feb. 19-20 in San Francisco.

"The primary focus is to present tools and techniques that will improve and enhance the way people use Microsoft Excel," said Mike Houston, associate product manager . "Customization and support will be emphasized." Sessions will address Excel on the Macintosh, in the Windows environment for IBM PCs and compatibles, and with the OS/2 operating system. Topics will include remote data access, working with System 7.0, using macros for programming, development tools, and the transition from Windows to OS/2.

The two-day events are priced at $495. Hotel and travel discounts are available.

For more information, contact Microsoft Excel Development Conference, Microsoft Corp., Dept. 127, 1 Microsoft Way, Redmond, Wash. 98052-6399; (800) 227-4679, Ext. 6239.

Digital Photography Conference to be held in Washington

Washington — The National Press Photographers Association will hold its fifth annual Digital Photography Conference in Washington Feb. 8-10.

The three-day conference, co-sponsored by USA Today, will feature displays and demonstrations from such companies as Canon, Nikon, Sony, The Associated Press, Crosfield and Scitex. The keynote address will be delivered by Andy Lippman, associate director of the Media Lab at the Massachusetts Institute of Technology in Cambridge.

Denny Gainer, USA Today news photo editor and Digital Photography Conference trade show coordinator, said he expects the seminar on still video to be the conference's hot spot. Seminars on such subjects as the ethics of electronic photo retouching, compression and archiving of digital images, and advances in wire service technology also are planned.

The registration fee for the conference is $100.

For more information, contact conference chairman Frank Folwell of USA Today, 1000 Wilson Blvd., Arlington, Va. 22209; (703) 276-3637.

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Old Macs

From Page 26

Automation Technology department's requirement analysis group. Although Bechtel is squeezing all it can from the machines, it may hit the wall soon.

Foster uses the Pluses for network testing and has proposed that they be used for training. Even if the proposal goes through, however, the machines may not be adequate.

"We've had requests for SE/30s and IIcx systems, and my first instinct is that's the best way to go because there are a lot of things to teach about the new operating system," Foster said.

While IS managers were hard pressed to come up with a precise formula for calculating a Mac's return on investment, the common depreciation period is five years.

With that life cycle in mind, Martin Marietta Corp. made the SE its standard low-end product and bypassed the SE/30 in favor of the Mac IIcx on the high end, said Chris Gladwin, product evaluation specialist in the company's Computing Standards department in Chantilly, Va.

"When you look at [the SE/30] over five years, it doesn't give you long-term use," Gladwin said. "It's a powerful processor but you're limited with its expansion slots. And over the long term we believe color will be popular, so we'd have to buy a second monitor for it.

"Up front it may address some requirements," he added. "But as a corporation, do we want to buy hundreds of these, and will they be good over five years?" he asked.

For Gladwin, the answer is "no" when compared with the Mac IIcx. "For a few hundred dollars more you can have a color monitor and three NuBus expansion slots, which we think will be important."

Preparing for the future. All of the models Apple introduced this year use the Motorola 68030 CPU, which comes equipped with a Paged-Memory Management Unit (PMMU). A PMMU is necessary to take advantage of the true multitasking and virtual memory capabilities of the upcoming System 7.0. But many MIS managers want to preserve their investments in non-68030 Macs while taking advantage of System 7.0. That will require putting 2 Mbytes of RAM in their machines that currently have 1 Mbyte and installing PMMUs in their 68020-based Mac IIs. Even with the extra memory, 68000-based Macs won't have access to all of System 7.0's features.

"The only feature you don't get on machines other than 68030s or '020s with PMMU chips is the virtual memory capability," Palkovic said. "It's a nice feature, but it's not live or die for us. A 2-Mbyte Plus that can run one or two programs simultaneously is still a viable machine."

Because of System 7.0, Rogers Corp. now will buy only 68030 machines, said Paxton, who will also boost the memory in his existing machines to 2.5 Mbytes. Users who won't need virtual memory will run the company's 68000-based Macs, while engineering and finance users are likely candidates for the 68030 processors.

Is it worth the cost? Adding a PMMU chip, which costs about $400 from Apple and less than $200 from other sources, is cheaper than buying a new 68030-machine, noted Duthie, who believes users will live without System 7.0 for as long as possible.

SeaFirst's Bowman agreed.

"The question is more do you or do you not need System 7.0?" he said. "It'll be a long time before many Mac users here need the power that is brought to the desk with System 7.0. There's a substantial portion of our Mac population that will never need to use System 7.0."

For Bechtel's Foster, System 7.0 is worth the expense. To ensure System 7.0 compatibility on new machines, Bechtel no longer buys SEs, said Foster, who is also purchasing IIx systems instead of Mac IIs. (Apple's II-to-IIx upgrade price of $2,199 includes a $1,500 credit with the return of the old logic board.)

A new SE/30 at about $4,700 makes more sense than spending some $2,300 to upgrade an SE, Paxton said. "If the choice is between buying a new machine or upgrading SEs to SE/30s, we'd get another machine," he said.

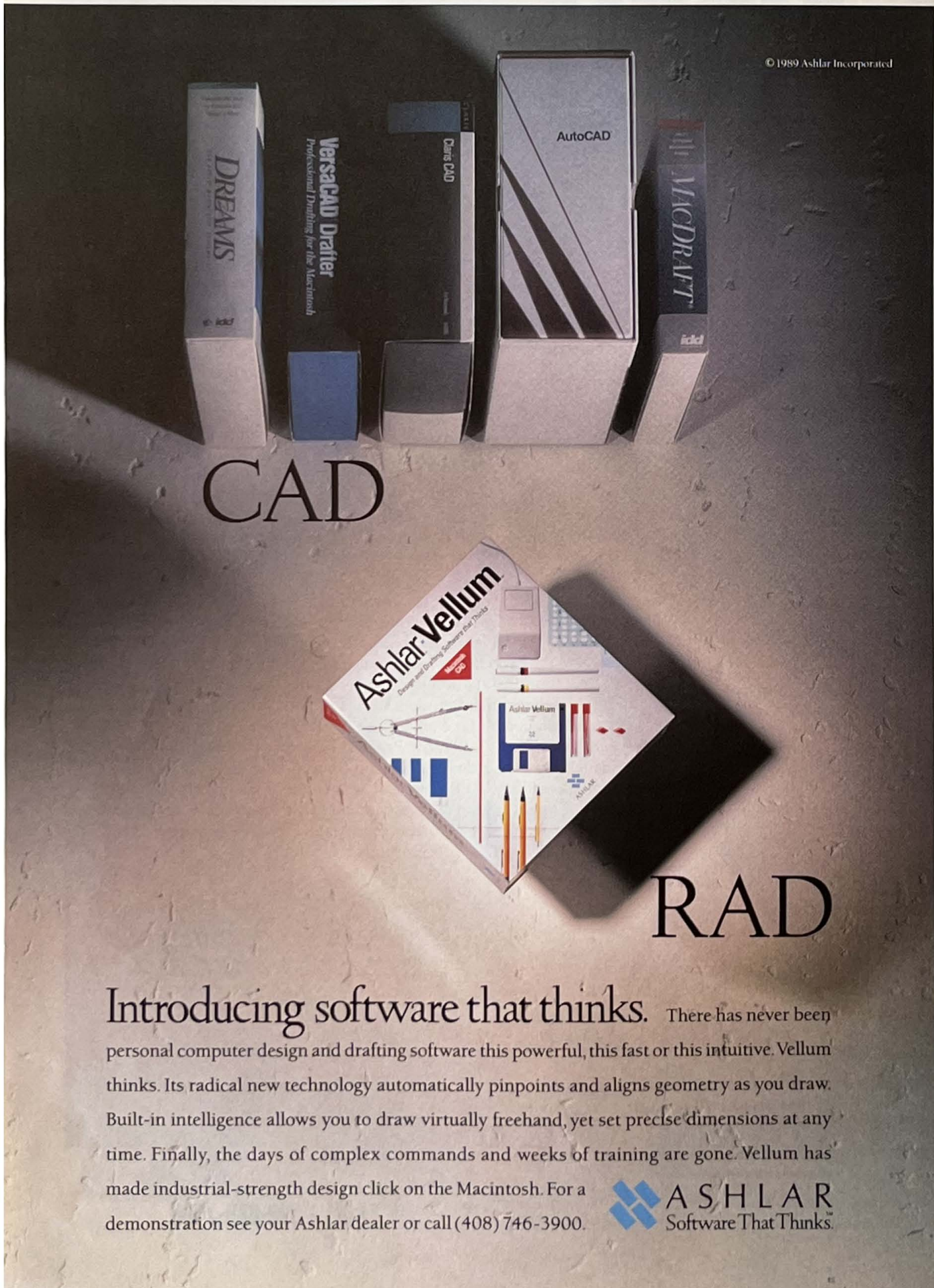
(Apple charges $1,700 to upgrade an SE to an SE/30, although there is a $750 credit with return of the old logic board.)

Martin Marietta encourages its power users to buy the System 7.0-compatible IIcx because it should require fewer upgrades over the years, Gladwin said. When power users move up to the next powerful machines, users "further down the food chain" will get their older machines. And because Martin Marietta started buying Mac IIs and SEs in volume only last year, the machines have a while to go before they will run out of gas.

And when the Macintoshes do start showing their age, Gladwin said he believes the company will go the enhancement route.

"The precedent toward the end of a life cycle is to try to squeeze a few more years out of a machine with expansion products," he said. □

Emily Kay is a free-lance writer in Chelmsford, Mass., and a frequent contributor to MacWEEK.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MacWEEK'S ARCHITECTURE & ENGINEERING REPORT

How to determine the CAD packages and programs you really need.
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Training: Getting the most out of your CAD applications.
See Page 38

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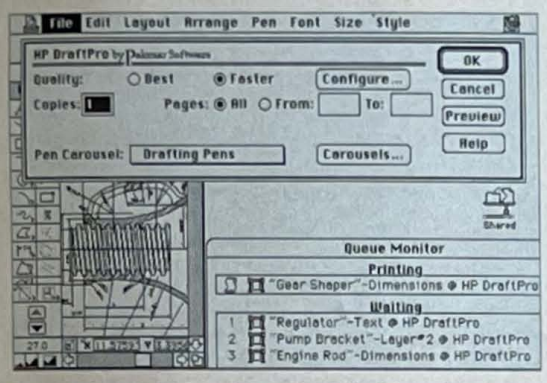

Palomar Software's PLOTTERgeist is a Chooser-level driver that presents a control box and displays a queue of files waiting to be plotted.

Plotting Mac CAD not plug-and-play

By Carlos Domingo Martinez

Greensboro, N.C. — Getting hard copy from a Mac tends to be easy. In most cases, connecting the printer is a plug-and-play operation. However, with CAD applications, things aren't always so simple. Engineers and architects need plotters to get quality output. And plugging a plotter into your Mac can be problematical — akin to the printer interfacing woes of a decade ago.

"Connecting a plotter to the Mac can present complications," said Susan Stanley, vice president of Engineered Software, the Greensboro, N.C.-based developers of PowerDraw 3.0. "Users need to be concerned with communications issues like baud rates and parity, and often need to configure DIP switches in the plotter itself. Sometimes just getting a cable with the

See Plotters, Page 43

Moore and Associates turns to Mac CAD

Industrial design firm finds Intergraph system adds hours of thinking time

By Chris Mario

New York — When a New Jersey industrial design firm that creates products for the elderly and disabled installed Intergraph's MicroStation Mac, it found the time to change its mind.

"MicroStation Mac saves lots of time in drafting and making models," said Evan Hirsch, an industrial designer with Moore and Associates of Montvale, N.J., who was invited by Intergraph to demonstrate his use of the program at the 1989 Architecture/Engineering/Construction Expo and Conference, held here Dec. 12-14.

"If I have 50 hours to devote to a project, I used to spend about 25 hours playing around with ideas and another 25 on the actual design," Hirsch said. "Now that I know I'll need less time for the design, I spend 40 hours just exploring options."

Since enhanced creativity was exactly what Moore and Associates wanted from an automated design package, Hirsch and his colleagues were pleased with MicroStation Mac, an interactive CAD system for the generation, manipulation and display of 2-D and 3-D graphics on the Mac.

Hirsch cited compatibility with other Intergraph systems; ease of use; 3-D capability; and direct access to Keith Bentley, the president of Bentley Systems Inc. and writer of MicroStation Mac, as the system's advantages. As for disadvantages, "the command window is too big and you can't change it, but if that's the only problem, I'll deal with it," Hirsch said.

Hirsch, a 1987 graduate of the Rochester Institute of Technology, developed a CAD program for RIT's department of industrial and environmental design as an undergraduate and worked with Intergraph's VAX-based 3060 workstation during a summer internship. At Moore and Associates, however, cost considerations put the larger systems with which he was familiar out of reach.

"At first I thought that DOS was the way to go low end," Hirsch said in discussing his search for a CAD system. "But since the Mac was already in our office for word processing and spreadsheets, I said, 'OK, what's on the Mac that can do what we want?' Well, I found out that nothing was available with the 3-D power we needed, so I called Intergraph and they put me in touch with Keith Bentley."

Despite Hirsch's initial belief that the Macintosh was not powerful enough to handle the demands of 3-D CAD, Bentley convinced Hirsch to become a beta tester for MicroStation Mac, which had just been announced at the April 1989 National Computer Graphics Association show in Philadelphia.

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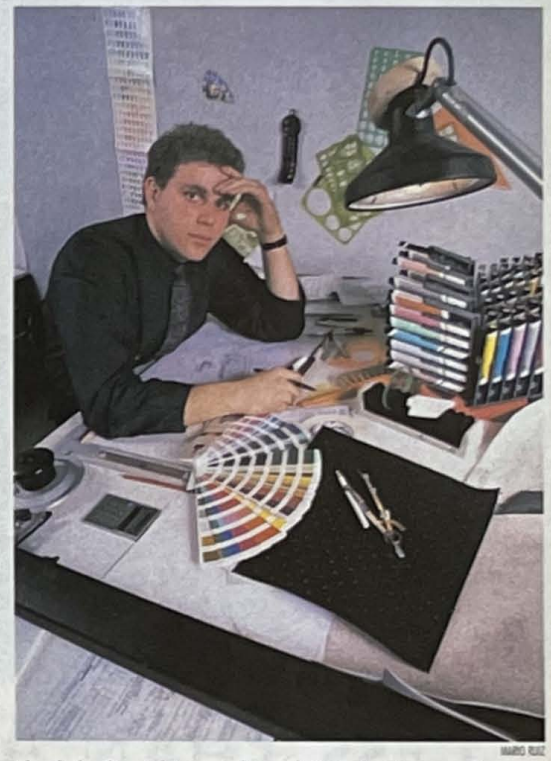
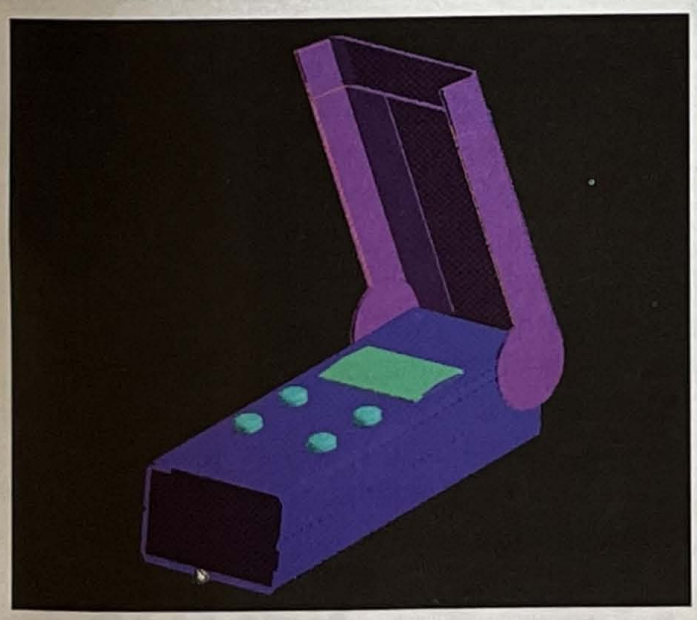


Already familiar with Intergraph's workstation-based system, Evan Hirsch opted for MicroStation Mac after joining Moore and Associates. He said he likes the package's power, 2-D and 3-D features, and price.



Industrial design firm Moore and Associates of Montvale, N.J., used MicroStation Mac from Intergraph to design this easy-to-use pill dispenser for the elderly and disabled.

Vector acceleration: The next standards war?

TECH ANALYSIS

By Frank Conforti

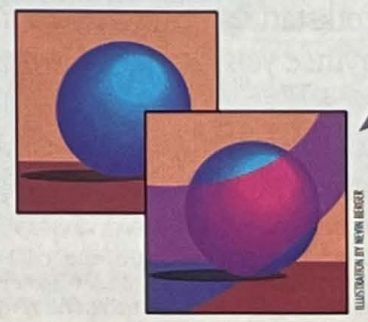
The debut of QuickCAD, Radius Inc.'s new vector accelerator, has begun a new battle, one that Apple cannot afford to ignore. With the CAD market at stake, products like QuickCAD may be important to the acceptance of the Macintosh as a CAD platform — if certain "driving" problems can be overcome, that is.

Although the Macintosh seems to have all the right ingredients to be an outstanding CAD platform, a brief hands-on session shows it to be otherwise. What becomes apparent when evaluating Mac-based CAD is that the Mac IIx has about the same performance as a comparable, and less expensive, 16-Mhz '386 clone.

This may seem surprising, since the Macintosh has always been associated with excellent graphics performance. In fact, the rapid, almost instantaneous manipulation of bit-mapped data or pixels is still what sets the Macintosh apart from other computers on the market.

But CAD relies heavily on a different type of data: vectors. Whereas a pixel element is represented by an integer number from one to 24 bits, a vector element usually consists of an element type (such as a line, arc or circle), spatial data (x, y, z coordinates) and descriptive attributes (color, pattern, thickness or layer). To complicate this even further, spatial-coordinate data is often expressed in real numbers requiring floating-

See Accelerators, Page 42



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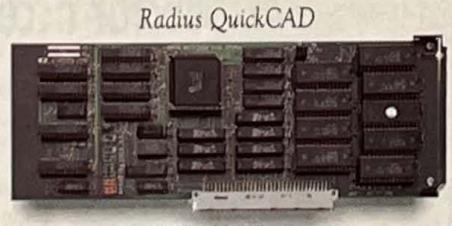

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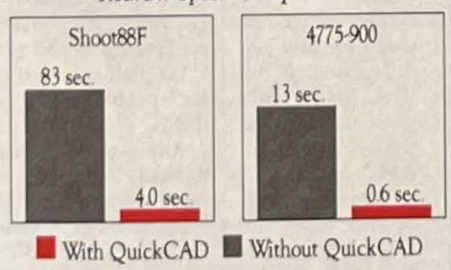
Redraw Speed Comparisons



Based on test drawings "Shoot88F" and "4775-900" run on a Macintosh IIcx.

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Choosing a CAD package: Let your needs be your guide

By Phillip Robinson

Today, scores of CAD programs are available for the Macintosh. That's good news if you remember the days when Mac CAD meant an over-achieving copy of MacDraft. It's bad news if you have to choose one particular CAD package, then live with that decision for a while.

There are some basic questions to answer when choosing Mac CAD. The order of these questions is important, as you'll see.

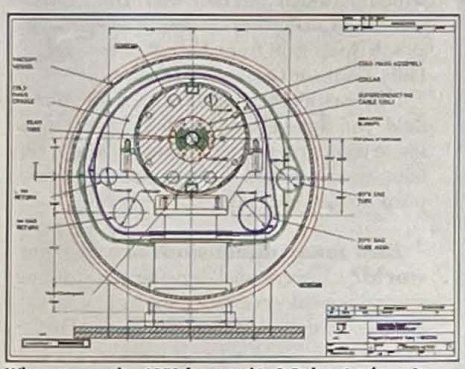
Do you need CAD? This is the most important question to answer, since it could save you a lot of time and bother with the other questions. CAD is one application that developers would love to see blossom into a major category. Not only does CAD software traditionally sell at higher prices than office-oriented applications, but it also has created a market for add-on hardware — from large displays and disks to faster processors.

As a result, developers and retailers have a keen interest in selling you on the idea that you "need" CAD, even if you're not an engineer, scientist or architect. After all, why use a mere drawing package when you could have the accuracy and flexibility of a CAD package?

Ignore that propaganda. CAD is for precise and accurate design, not for drawing and illustration. If you're sketching office plans or diagrams, a drawing program (such as MacDraw II from Claris Corp. of Santa Clara, Calif., or Canvas from Deneba Software of Miami, Fla.) is just fine.

The people who truly need CAD are those who are already drawing and "dimensioning" mechanical, electrical, architectural or other plans, or who have avoided that work because it was just too difficult with the old system.

Mac-based CAD could bring the work to their own desks, improve the appearance of the results and eventually speed the drawing process (this takes place after a symbol library has been built, drawings have entered the revision process and the user has become proficient with the program).



When converted to IGES format, this 2-D drawing loses its text styling and justification as well as its solid fills.

Who will use the program? The person who sits in front of the CAD display isn't the only user. You have to consider colleagues, too. What CAD package are they using or have been trained to use? Are there long-in-the-tooth drafters who might be unhappy about switching to Macintosh CAD? What about your customers, subcontractors and suppliers?

Most of those people will want to make changes to your drawings, send you their own work, swap symbols and so on. Although most drawings can be moved around as PICT, DXF, IGES or some other standard (CADMover from Kandu Software Corp. of Arlington, Va., is popular for making translations), it's easier and safer for the drawing's integrity to move it in its native form.

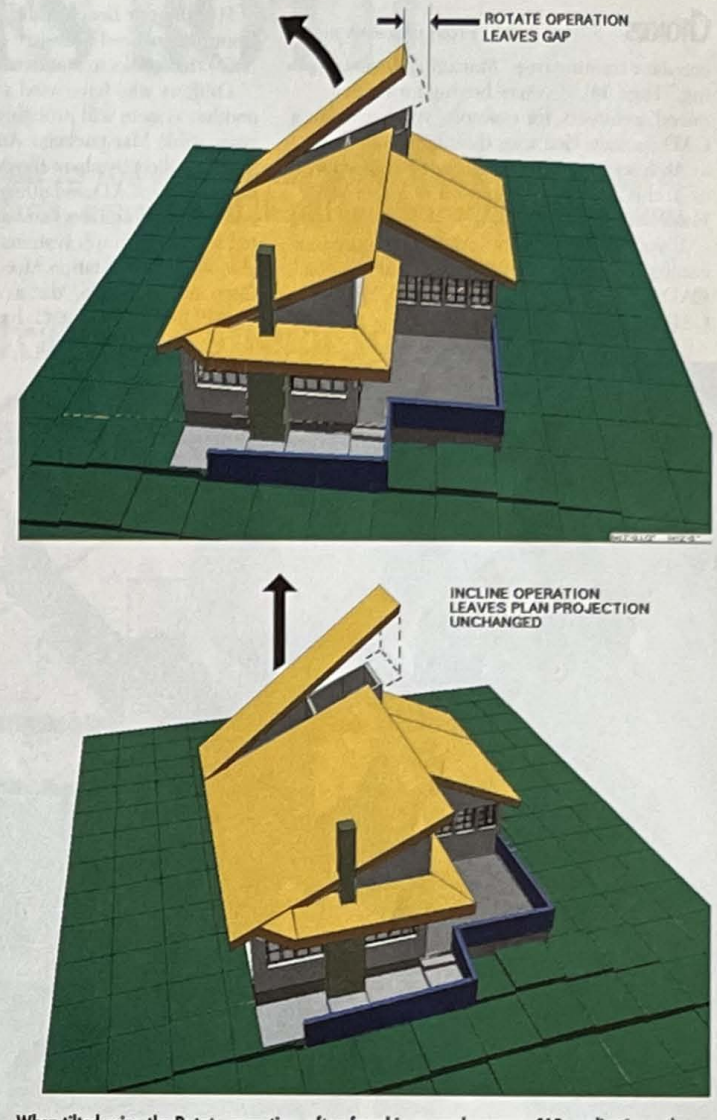
What are the formats? PICT is the Macintosh standard for moving graphics, DXF (Drawing Interchange Format) is Sausalito, Calif.-based Autodesk Inc.'s AutoCAD format for moving CAD files, and IGES (initial graphics exchange specification) is a more general CAD standard. DXF and IGES are constantly evolving.

Programs that claim "DXF and IGES compatibility" are not always working with the same version of the standards and they don't necessarily implement each part of the standard in the same way. In other words, you could save a CAD file in DXF or IGES format from one program, open it up again in another program and discover that some elements were missing or had been converted into similar but not identical entities.

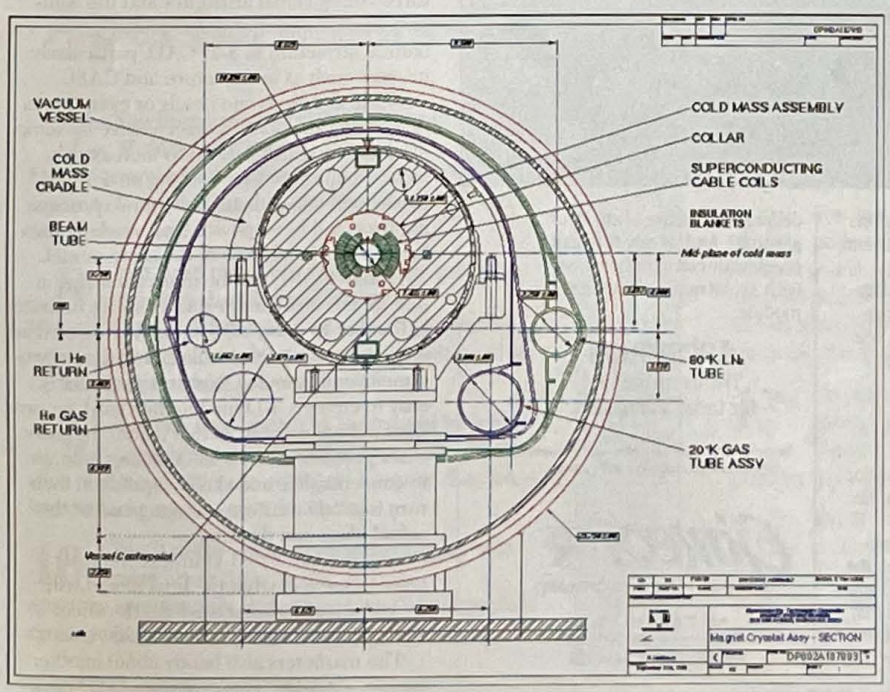
Moreover, any translation slows things down and risks losing some information, such as dimensions or editable curves. It may be wiser to pick a CAD package with which you're not completely thrilled just to be able to share tips, ideas, drawings and general know-how with others in your work habitat.

When determining who will use the CAD program, you should also

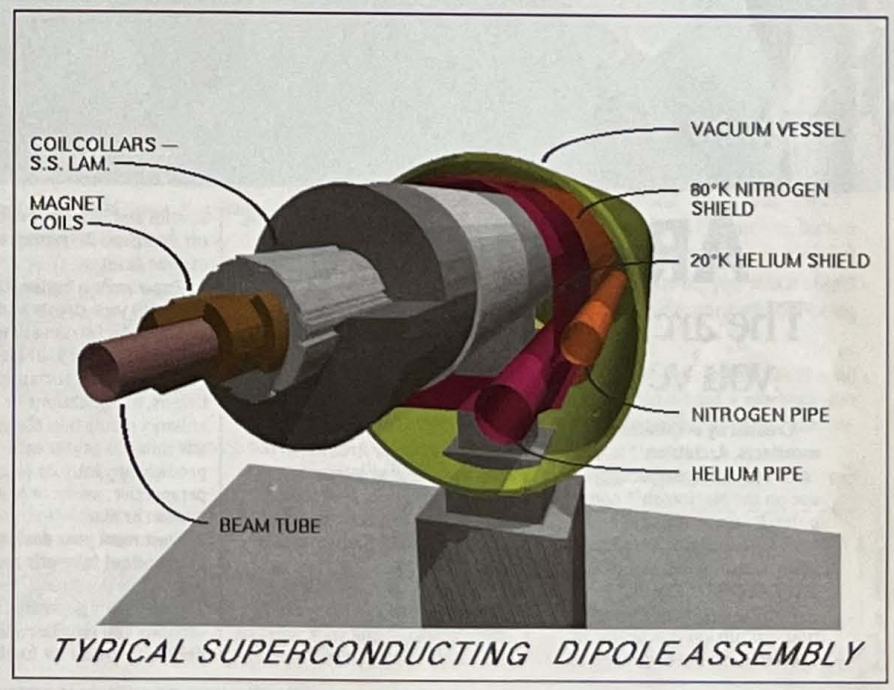
See Choices, next page



When tilted using the Rotate operation, often found in general-purpose CAD applications, the roof in this CAD drawing (above, top) no longer lines up with its corresponding walls. Some architecture-specific applications provide an Incline operation (above, bottom) that lets users adjust the slope of a roof, which then maintains an accurate relationship with supporting walls.



Created in Claris CAD, this original 2-D drawing contains a variety of text and formatting styles. (Compare with the screen shot of IGES format shown above.) Geometric elements on both screens retain accurate sizes and shapes.



While 3-D CAD programs may be more difficult to work with, the third dimension often conveys information that a two-dimensional image cannot. The 3-D object above is the same one shown in 2-D perspective at left.

Choices

From previous page

consider training (see "Managing CAD training," Page 38). If you're buying for experienced architects, for example, you may want a CAD package that uses their language (such as Architrion II from Gimeor of Washington or ArchiCAD from Graphisoft of South San Francisco, Calif.).

If you're buying for a variety of people in a company, you may want a middle-of-the-road CAD package (such as Claris CAD; VersaCAD/Macintosh Edition from Versacad Corp. of Huntington Beach, Calif.; or PowerDraw from Engineered Software of Greensboro, N.C.) that sticks to standard Mac terms.

Drafters who have used a CAD package on another system will probably want a similar or compatible Mac package. AutoCAD on the Mac can directly share files with all other versions of AutoCAD and offers a similar set of commands. Engineers and architects acquainted with Intergraph systems will be comfortable with MicroStation Mac from Intergraph Corp. of Huntsville, Ala., as well as with SNAP! from Sunset, S.C.-based Data Basics. Designers who use BRAVO! from Schlumberger Technologies of Ann Arbor, Mich., on a Digital Equipment Corp. VAX should feel at home with MacBRAVO!

How much Mac to buy? Deciding how much Mac you need can be difficult because CAD can employ every hardware resource you can afford. Calculating the precise positions of many on-screen points to more decimal places than can even be shown takes a lot of processor time. Complex CAD files can sometimes grow to 1 Mbyte or more.

Few CAD programs need color, and even if you have color, you may find yourself turning it off to save RAM and boost drawing speed. Still, it is useful to have colors for electronic schematics and for multiple layers or groups of objects in a CAD drawing. Color becomes a necessity when you're creating a rendering for presentation.

Is there a package specialized for your field? What you'll find in most computer stores is general-purpose CAD, along the lines of Claris CAD; Vellum from Ashlar Inc. from Sunnyvale, Calif.; or AutoCAD.

But the CAD market also features programs optimized for VLSI (very large-scale integration), electrical, printed-circuit board, molecular design and CAM. Not only do specialized CAD packages offer better libraries of symbols for quick drawing by plunking complete subassemblies or standard parts onto a page, but they often sport commands you won't find in a general-purpose package. For example, Schlumberger's MacBRAVO! Facilities, meant for facilities managers and planners, has a tool palette optimized for wiring, plumbing and other aspects of office layout.

And while you certainly can use general-purpose programs to draw circuit diagrams, there's no way they'll analyze the circuit or generate a net list for the electronics engineer. For that, you need electronic design automation software from such companies as Douglas Electronics of San Leandro, Calif.; Capilano Computing Systems of Vancouver; or Vamp of Los Angeles.

Products like MiniCad+ from Graphsoft of Ellicott City, Md., or Origins from Deltasoft Inc. of Tulsa, Okla., can turn out a creditable structure design, but they won't run a sun-and-shade analysis or create a walk-through, as will SpaceEdit from Abvent of Beverly Hills, Calif., or Gimeor's Architrion II.

If there's a specialized package for your field, you should think carefully before turning to a general-purpose package. At the very least, you may want to customize a general-purpose CAD package.

How many dimensions are in your world? Conventional drawing and painting programs work on a two-dimensional, flat surface. So do many CAD programs. That's fine for most CAD work. It was also the only option when working with pen and paper.

Since most real-world products have some three-dimensional attributes and the computer can comprehend 3-D models, there's a natural attraction to 3-D CAD, particularly in areas such as architecture and CAM.

While not everyone needs or even thinks in three dimensions, there's a drive by some marketers to push 3-D on to increasingly more computers. But working on a 3-D model will take substantially more processing time and horsepower than working on a two-dimensional view of the same model.

Moreover, 3-D can be more confusing at first for the designer or drafter — it's definitely tougher to grasp a 3-D model (projected as it is on a two-dimensional screen) than a two-dimensional drawing. Nor is it particularly easy to create a 3-D model, then work on two-dimensional sections of that model. In many cases people use the 3-D modeling program to conceptualize and sketch a product, then turn to a 2-D drafting package to make the actual plans and drawings.

So don't move to 3-D unless you truly want to see just what the final model will look like and you just can't get the effect from a variety of two-dimensional views.

The marketers also bandy about another term — "2.5-D." This describes CAD packages that have some ability to extend a two-

See Choices, Page 34

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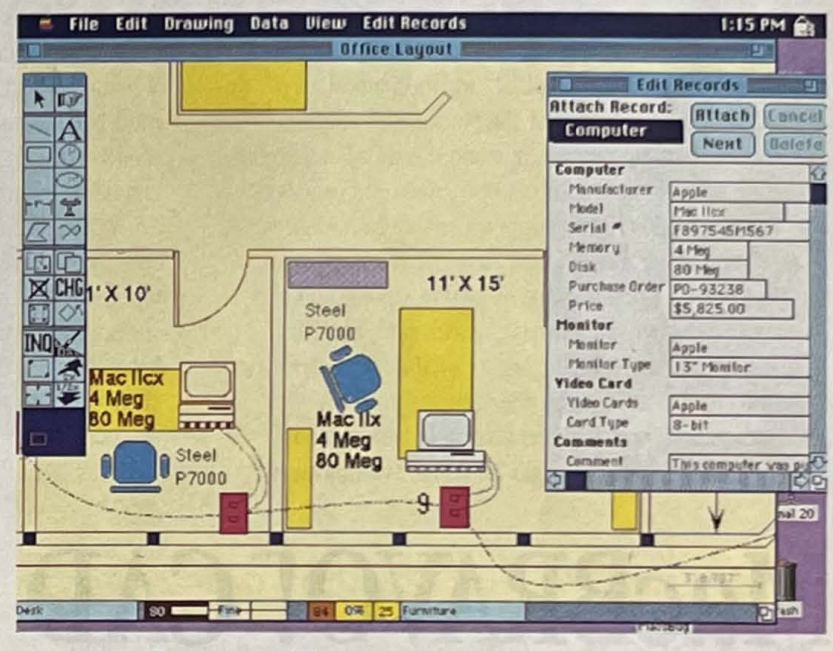

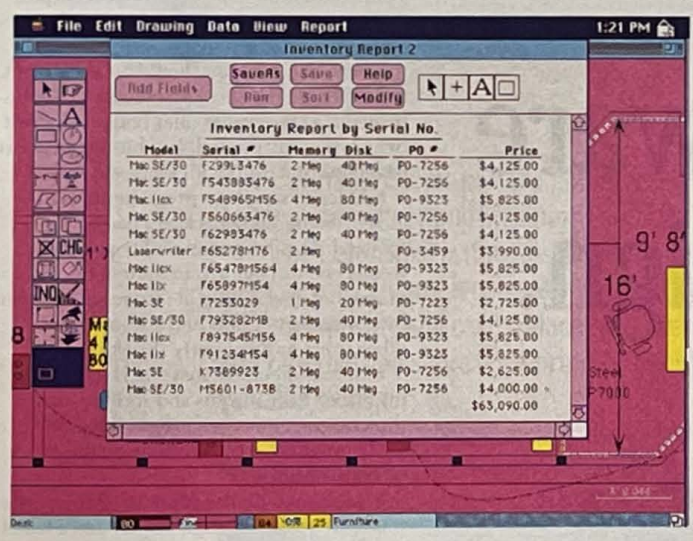
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Mac SE/30 F793282MB 2 Meg 40 Meg PO-7256 $4,125.00
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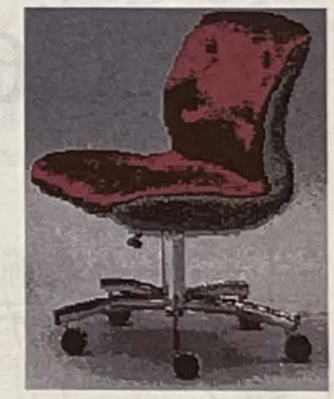

6. You can link drawings together to form complete systems.
You can make any object into a link button. When you click on it, *Aperture* will automatically display the drawing and view your specified.

Aperture's drawing facilities are powerful and exciting.

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Name layers and turn them on and off with the click of a mouse. You can even gray layers so they fade into the background—great for tracing.

10. You'll never spend time adjusting lines to meet other lines again.
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MAKE YOUR DRAWINGS SPEAK FOR THEMSELVES!

Consider your CAD options

The following options should be considered when evaluating CAD programs:

▶ Full set of drawing primitives and editing commands? Some CAD packages advertise their hundreds of primitives (circles, arcs, lines) and commands (duplicate, mirror, distribute). Beyond the basics, it's nice to have Bezier curves, fillet and chamfer commands, and object-distribution options, but you won't find them called into practice very often.

▶ DXF (Drawing Interchange Format) and IGES (initial graphics exchange specification) compatible? Although standards aren't bulletproof, they're the best insurance you have of being able to move files between your package and other CAD systems and programs.

▶ Floating-point or integer precision? CAD programs use coordinates that are in floating-point form for greatest precision or in integer form for less precision but faster processing. Floating-point capability can be a requirement for finished work in aerospace, CAM or similar high-tech work, but it isn't necessary for many other tasks.

▶ Color? Some color is good in any CAD program for emphasizing and differentiating layers or dimensions. Few CAD tasks demand more than 16 colors, and even fewer require more than 256. Only the rendering of 3-D models requires more color.

▶ Layers? Designs can be better organized, particularly in electrical and architectural work, if the program offers layers within a single drawing that can be shown, hidden, locked and otherwise individually controlled. Sixteen layers should be the minimum available; 256 is more than enough.

▶ Views? Being able to zoom in and out to any degree, to see two windows on the same drawing at once, and to assign names to particular pan and zoom settings on a drawing are functions that make drawing easier.

▶ Symbols? Symbols are collections of drawing primitives manipulated as a unit and assigned a single name in a stored library. Drawing is faster and more accurate if you can use standard symbols and can create your own symbols.

▶ Dimensioning and measurements? Any CAD package should let you assign dimension labels to lines, arcs and angles. These dimensions should be "autodimensions," in that they will change their measurement value automatically when you change the size of the line, circle or angle. Similar commands should automatically calculate the area, angle or length of an object.

▶ Patterns? You'll want at least 16 fill, or "hatch," patterns to represent materials or parts of a drawing, and about a half-dozen line and arrow patterns for similar purposes. More than that is often superfluous.

▶ Snapping? Any CAD package should let you "snap" a newly drawn line to the nearest grid intersection or previously drawn object. This makes it possible to draw precise positions without zooming in and tediously placing each new object.

▶ Text support? You should be able to put text notes and labels on the drawing. Sophisticated CAD packages offer both vector text (which is easily plotted) and bit-mapped text (standard Mac stuff with fonts and styles).

▶ Macros, scripts or programming language? Some CAD packages can be customized. This programmability not only means you can tailor your system by programming or scripting, it also means you can buy or borrow scripts and add-ons from other users or third-party developers.

▶ Spreadsheet, database or HyperCard interface? Like macros and scripts, such direct connections can extend the utility of a CAD program, such as offering a bill of materials feature.

▶ Tablet and plotter support? Drafters often prefer to work on a large display and a tablet — a flat surface that can hold a template with commands and support a stylus for direct sketching. Most engineering and design tasks still call for plotter output, which is not standard on the Mac. You can buy plotter drivers as add-ons, but direct support from the program is safer. — *By Phillip Robinson*

Choices

From Page 32

dimensional model into a third dimension — such as by extruding from the flat drawing — but that don't offer full control and editing in all three spatial dimensions.

Finally, if you've been nervous about buying Macintosh CAD as opposed to an IBM PC CAD package, rest easy. Mac CAD now offers just about any feature or option you'll find in PC CAD. The market may not be as mature or as polished, but the power is there.

And when you add the Mac's easily learned interface and smooth integration of programs, you won't be surprised to learn that more PC CAD users jump ship to the Mac than Mac users flee to the land of DOS. □

A former engineer, Phillip Robinson is now a writer and editor for Virtual Information of Sausalito, Calif.

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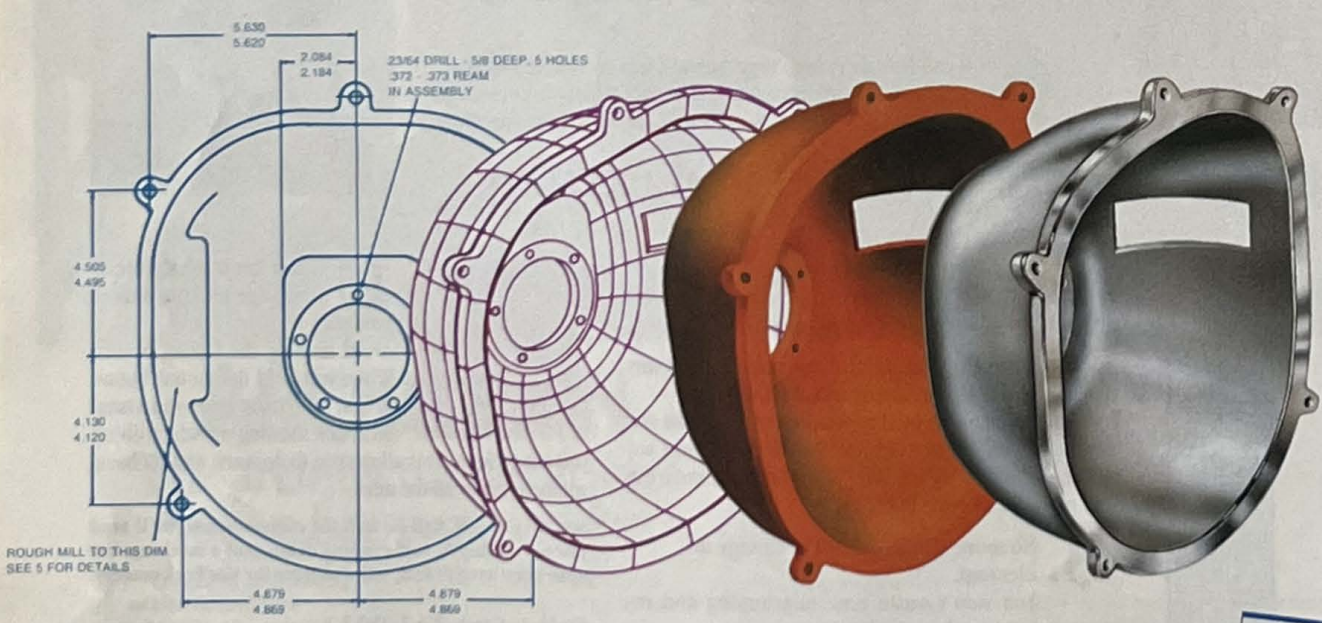

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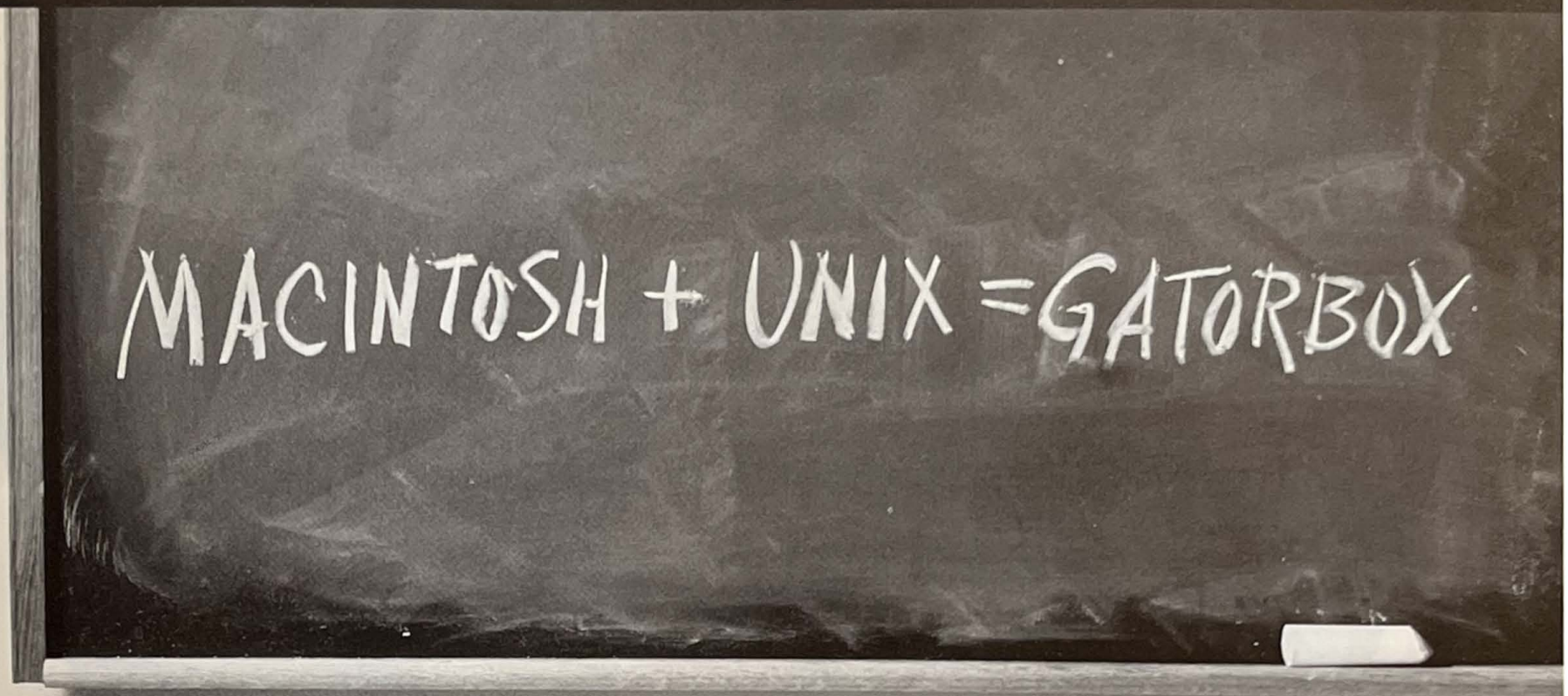

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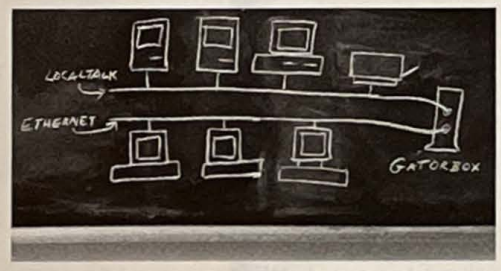

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Supports TCP/IP	■	■	
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PART IV SOLUTIONS

Industry Challenged To Take Role In Education

As we have seen, the inadequacy of the U.S. labor force is reaching crisis proportions. The average literacy level of today's young adults is below the average level needed by the job market. In the next ten years, the job market will demand an ever higher level of proficiency in reading and math. Many young adults with only a high school diploma or worse, will effectively be shut out from the job market as demand for unskilled, manual labor jobs decreases. This ever growing segment of the population will become a drag on the economy due to increased unemployment.

Corporations can ill afford not to try and remedy this situation, for if they do not, they will not have a satisfactory pool of job applicants from which to choose the workers to fill the positions which will develop in the next several years. The jobs will have to be filled by unqualified, uneducated workers. This will create lower productivity and thus a lower standard of living across the board. This, of course, has worldwide implications as well, adversely affecting U.S.

Sponsor curriculum development

As corporations assess key skills required over the next several decades, they should cooperate with high schools and junior high schools to develop programs that breed interest and proficiency in these areas. Corporations can even sponsor extracurricular activities such as science, computer or speech clubs that would reproduce real-life situations. Exposure, experience and excitement about the field can grow together.

Reward those who graduate

Corporations can offer guaranteed part-time employment to students who agree to remain in school and pursue courses preparing them for careers in their chosen field. Students perceive an incentive to stay in school and to experience a variety of disciplines.

Support employee involvement in school activities

Corporations should encourage executives to spend time with students in the classroom. The man-hours forfeited would be repaid many times over. For students, school becomes a more interesting environment with clear attachments to the outside world. At the same time, the company builds a close relationship with young people with roots

"THE BEST COMPUTER FOR PUBLISHING EVER MADE."

The words are those of Jonathan Seybold, perhaps the most respected voice in desktop publishing. His newsletter, The Seybold Report, reaches some 200,000 publishers–of whom we estimate 199,990 have never even tried a NeXT™ Computer.

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And, as Publish! magazine recently reported, the NeXT Computer "offers a staggering price advantage" when compared to personal computers configured for desktop publishing.

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Managing CAD training

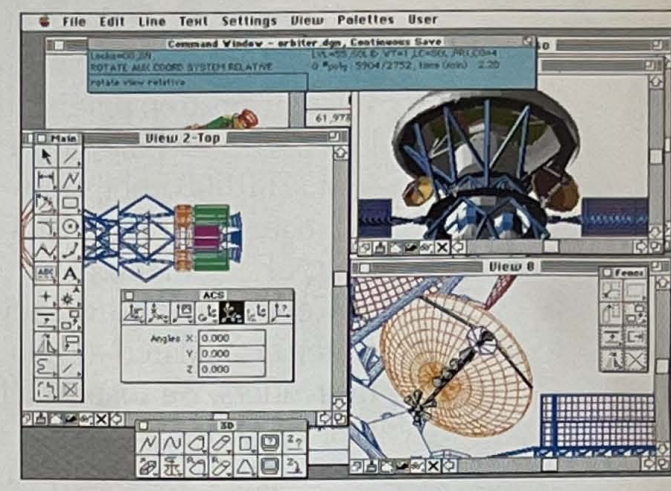
Just because they run on the Macintosh doesn't mean CAD programs are easy to learn. If you don't train your employees, you won't get the full value out of your purchase.

By Don Crabb

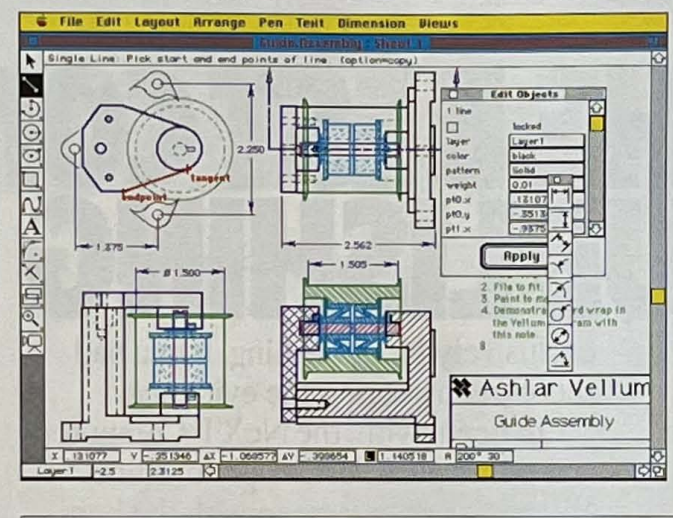
Most people know that the first CAD systems were dedicated monsters that could easily set a company back by as much as $100,000 for each design seat. Since each of these systems used proprietary operating systems and CAD software, companies had to rely on the vendors for training. Aside from the expense, training was typified by poor vendor-supplied documentation and tutorials as well as few third-party training companies. In many installations, months would roll by before engineers and drafters could really make use of their CAD workstations.

One program, running on IBM PCs and compatibles, changed all this. AutoCAD from Autodesk Inc. of Sausalito, Calif., revolutionized how the world viewed CAD and CAD training. Even in its early releases, AutoCAD gave PC users a substantial portion of the power available on dedicated CAD workstations — at a significant reduction in cost. AutoCAD provided measurably faster training than that of dedicated CAD workstations. Moreover, Autodesk addressed the training problem directly by offering decent tutorials, sample drawings and its own training classes. But

See Training, Page 40



Intergraph's MicroStation Mac (right) highlights the tool chosen from the tool palette and uses text in the command window to describe the object. The program is the first to offer multiple windows that are active at the same time.


File Edit Layout Arrange Pen Text Dimension Views
Single Line: Pick start and end points of line (option=copy)
Edit Objects
Apply
Ashlar Vellum
Guide Assembly

Ashlar's Vellum (left) features a "drafting assistant," which tells users precisely where the cursor is in relation to on-screen objects. The message line at the top of the screen guides users through the drawing process.

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Training

From Page 38

these materials came at a stiff price. As a result, many managers opted to skip training altogether.

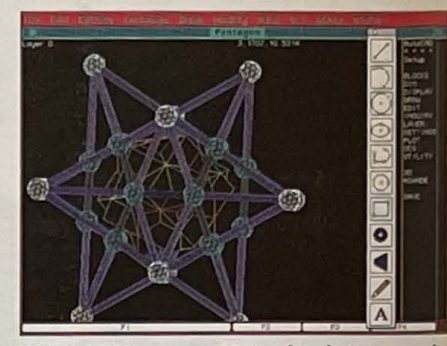
Ultimately, the lack of good AutoCAD training kept the "PC-ization" of CAD from "empowering" new CAD users in the way that companies had hoped it would. The simple fact is that the MS-DOS environment in general, and AutoCAD in particular, require significant training resources to get users up to speed. Once this fact seeped through, AutoCAD became a major industry force and AutoCAD training became big business.

In the past couple of years the CAD market has gone through a second revolution with the release of serious CAD software for the Macintosh. The Macintosh, with its black-text-on-white-background, high-resolution screen, graphical interface and built-in mouse, has proved to be a natural CAD platform.

But because Apple has promoted the Macintosh as the computer to "empower" the individual, managers expected some kind of natural training osmosis to take place. When that didn't happen, the Macintosh was slammed as a bad CAD platform.

The problem wasn't the Mac or even the software running on it. The problem was that managers didn't realize that Mac CAD, like PC CAD, requires training.

Misinterpreted studies. Studies done by the accounting firm of Peat Marwick Main & Co. for Apple in 1987 are often tossed about as proof that the Macintosh is so easy to use that training isn't an issue. These studies showed that the Macintosh increased worker productivity by about 25 percent over offices equipped with DOS-based PCs.



While AutoCAD uses some Macintosh tools, its command structure most closely resembles its IBM PC counterpart.

Few people, however, bother to read that the 25 percent productivity gains were reached *after* the Mac users went through a proper training program, just as the DOS users had done. The 25 percent figure does not represent the difference in productivity between Mac and DOS applications; it represents the differences in operating system functions.

Once you are in a highly technical application, much of the Mac's interface advantage fades. This is especially true for CAD applications, where standard menus and interfaces are still evolving.

With CAD, application-specific training takes on special importance. Because many CAD users may have learned their design and drafting skills at a drafting table, they need to be trained on the fundamentals of CAD itself and on the specific software they will use. They also need help with the many problems that crop up in installations composed of mixed software, mixed file formats and mixed machines. Multiply this by the number of design stations you've installed, and you get an idea of just how important CAD training is.

Determining users. All Macintosh CAD programs are not created equal, nor do they have equal training requirements. This fact takes on real importance in those installations where different engineering disciplines are involved in the same project.

A typical CAD shop, for example, may include drafters, mechanical engineers, electrical engineers, materials experts and systems people.

While drafters are mostly concerned with precise geometry and an accurate drawing database, a materials engineer may care very little. To that user, what's important is the basic physics of the materials used in the design. So things like moments of inertia, mass, rotation points and smoothness have to be calculated for this engineer to be happy.

Finding one program that supplies all the tools to satisfy everyone on your staff is nearly impossible. Managers will likely end up with a mix of programs, and their staff will have to become adept at exchanging drawing files.

Software affects training needs. The software you choose also will dramatically affect training. The two most popular Macintosh CAD programs, Claris CAD from Santa Clara, Calif.-based Claris Corp. and AutoCAD, require vastly different learning times. Although AutoCAD does have some 3-D rendering capabilities, it's basically a two-dimensional program, as is Claris CAD. That's where the similarities end.

See Training, next page

There are 24
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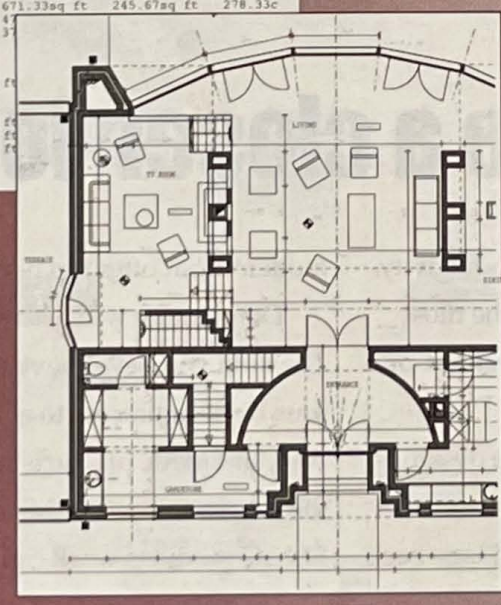

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Training

From previous page

Claris CAD is built upon MacDraw but adds a drawing database, special drawing tools, precision geometry and improved printing capabilities. Claris designed its two-dimensional CAD program to take advantage of the Macintosh drawing skills users have already learned with MacDraw. When you want to move a Claris CAD object, you point to it with the mouse cursor, select it and then move it. It is a simple interface that is surprisingly extensible.

AutoCAD for the Mac is almost a port of the famous IBM PC version. Basically, this program works *exactly* like the version on the PC. This simple fact provides the program's strengths and weaknesses. If you know AutoCAD for the PC, you automatically know AutoCAD for the Mac. But if you're new to micro-based CAD, you face the longest learning curve in the micro CAD business: 40 to 50 hours just to get past the basics.

When you want to move an AutoCAD object, "point, click and drag" gets you nowhere fast. Instead, you need to invoke special tools to move the vectors and splines that comprise an object. These skills just don't map to existing Macintosh drawing skills.

Program sophistication, however, does not necessarily translate to large training investments. For example, VersaCAD from Versacad Corp. of Huntington Beach, Calif., which goes head to head against AutoCAD, requires less than half the basic training time. Huntsville, Ala.-based Intergraph's MicroStation Mac, which boasts even-more-sophisticated features than AutoCAD, also provides a shorter learning curve for the fundamentals.

Interface factors. The biggest problem with training CAD users is that, despite the Mac's interface basics, no consensus on a proper Mac CAD interface has evolved or been dictated by a large vendor. We have, for example, CAD programs that offer exactly the same tools yet use those tools completely differently.

Some CAD programs use icons to depict their basic drawing and dimensioning tools, some use pull-down menus, and others combine pull-down menus with icons.

The easiest-to-use Macintosh CAD programs are those that have borrowed heavily from other Macintosh programs for their interface cues. It's not an accident that Claris CAD and PowerDraw from Greensboro, N.C.-based Engineered Software, are reminiscent of MacDraw II, or that Super3D from Silicon Beach Software of San Diego instantly will remind you of SuperPaint. Taking advantage of existing interfaces from other popular graphics programs is one way to make a CAD program easier to learn.

Psychological considerations. Most design engineers think in two dimensions. In fact, 2-D CAD vs. 3-D CAD is the most important hidden issue in Mac CAD training.

Until about five years ago, every mechanical engineer and drafter who graduated from a university learned to put together an object in his head as a 3-D model and decompose it into planar views that could be drawn either on a sheet of paper or with a CAD program.

But this basic approach to engineering design is changing fast. Today's engineering students are learning to think in 3-D from the start, with the z coordinate as important as the x and y in old Cartesian two-dimensional systems.

This change in education poses some major training problems. New designers, trained to think in 3-D, may have to take a two-dimensional view when integrated into a two-dimensional CAD installation. And older designers will need to take on a new mind-set as shops convert over to 3-D tools in the 1990s.

Choosing training materials. Third parties offer many different resources intended to provide information on, as well as supplements to, CAD training. These resources include videotapes and audio tapes, programmed references and textbooks, individual tutorials, CAD magazines such as CADENCE and MicroCAD NEWS, and training journals like Data Training and Training Magazine.

Several training companies also offer classroom instruction, as do several software vendors. Claris, Autodesk and Versacad, among other Mac CAD vendors, supply fairly extensive sets of tutorials with their software. Just because these materials are included in the price of the software, don't think them inferior to third-party training. By themselves, however, these materials do not constitute a training program.

Pulling together a real training program is a job for pros, either an outside consultant or an on-staff training specialist.

The bottom line is that despite the Macintosh's superior ease of use as compared with DOS-based PCs and CAD workstations, managers will have to provide a CAD training program for their staff. If they don't, those 25 percent productivity gains promised by the Peat Marwick study will only be pipe dreams. □

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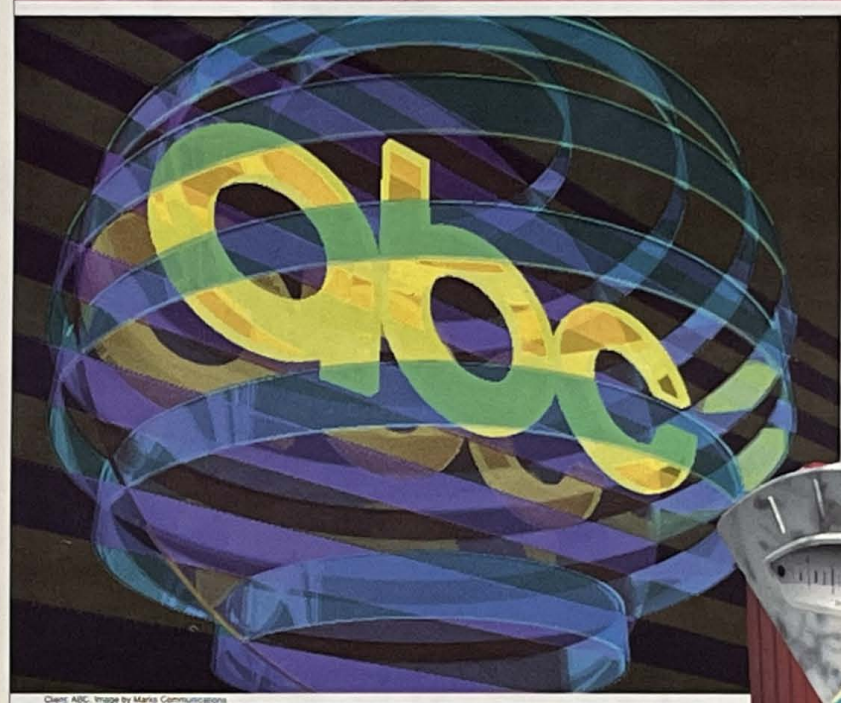

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Moore

From Page 29

Today, Hirsch uses MicroStation Mac for bluelines, color studies and graphic studies. He also creates presentation booklets for clients by flowing his designs into Aldus PageMaker.

"Let's say I do 12 versions of a design. I can take the pictograms, remove the hidden lines, dump them into PageMaker, put in the tones to make them look like renderings, and they come out of the printer with the Moore and Associates logo, ready to go," Hirsch explained. "And you can take your designs into DOS or Unix right off the Mac. I've got clients who have Intergraph workstations hanging off a VAX, and I can go to them and say, 'Here's the bill, here's the disk,' and not even have to do the drawings. Nobody else can offer that."

One of Hirsch's favorite features of MicroStation Mac is the reference files, which he describes as "giant tracing pads." "When I update a design, I attach a reference file and work over the original," he said.

See Moore, next page

Accelerators

From Page 29

point computations. When traversing the CAD drawing, the various aspects of the vector data must constantly be dealt with.

That's where the vector accelerator comes in. Simply speaking, such a device takes over the responsibility of displaying vector data. What this means to the user is dramatically increased performance. The vector accelerator eliminates virtually all the display overhead usually associated with large, complex CAD drawings.

Vector acceleration technology has been available in the DOS world for several years. Typical is Nth Graphics' Nth Engine, a combination video card/vector accelerator specifically designed to enhance AutoCAD and VersaCAD. Display times in most cases are nearly instantaneous. Although it's an excellent example of engineering, the Nth Engine suffers from having to be controlled by special driver software installed in the CAD program. Drivers constantly need to be updated for each new version of the CAD program. This approach is akin to the Startup document (INIT) used by Radius in QuickCAD.

In contrast, one of blessings of the Macintosh Toolbox is that most programs hide the Mac's inner workings from the user. The closest most Mac owners come to dealing with hardware configuration is the Control Panel. But this virtue makes it difficult to implement innovative enhancements on the Mac. When RasterOps Corp. first released its 24-bit video card, for example, the Mac had no standard

It may be possible to develop a solution that gives the Mac access to the latest technology without losing the integration that has given the Mac its edge.

for manipulating color data in sizes greater than eight bits. When Apple finally released 32-bit QuickDraw in 1988, it was incompatible with RasterOps' video card. This example shows how working without standards can lead to problems.

Has the Mac come to a crossroads with respect to vector-based drawing used in CAD? On the one hand, third-party vendors must conform to established Mac standards. On the other, technology is moving so fast that waiting for Apple to develop a standard may not be prudent.

A couple of avenues are available to accommodate products like vector accelerators. First, an industry standard can be adopted — for instance, a common vector-data format similar to and compatible with QuickDraw. Experience has shown that this type of industry cooperation can take years, if it happens at all.

Another alternative would be to adopt some sort of standard device-driver installation routine, like that used in the DOS world.

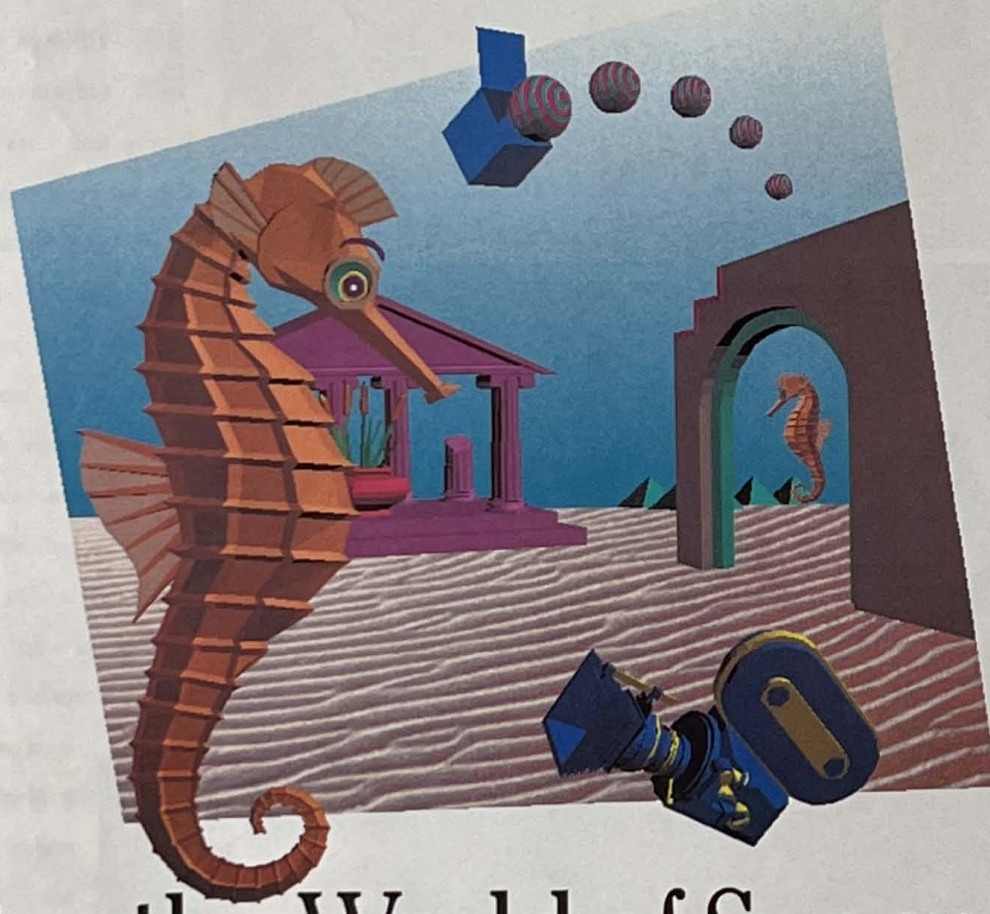
One way or another, something has to be done to boost the Mac's graphics performance.

The informed CAD manager is aware of the demand CAD places on the host system. Cost per seat, a common measure of CAD value, is now giving way to cost per millions of instructions per second. And if Apple is serious about market share, it will have to find ways to address those weaknesses in CAD.

Radius' QuickCAD board will not go unchallenged. Control Systems of Minneapolis, for example, is expected to offer a similar product in the first quarter of this year.

It may yet be possible to develop a solution that would give the Macintosh access to the latest technological enhancements without losing the integration that has given the Mac its edge. With all interested parties cooperating, getting to that stage could be smooth. On the other hand, it could be a rocky road. Only time will tell. □

Frank Conforti is director of MIS operations for a large multidisciplinary engineering firm in Florida. He has worked in CAD and electrical design since the mid-1970s.



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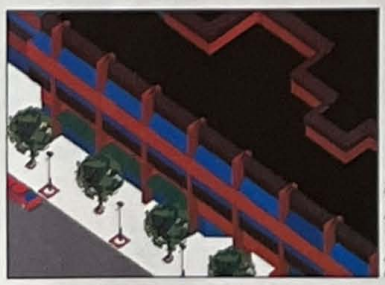

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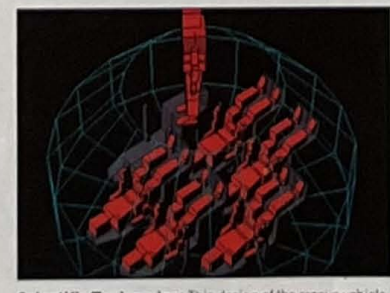

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Plotters

From Page 29

right connector can be difficult."

That's because plotters are built to work with a wide variety of computers. As a result, the responsibility for making the marriage work has fallen on the user. With Macs, a standard ImageWriter cable is usually the starting point, but often gender changers or plug adapters are required. And, depending on the plotter, even the dreaded custom cable may be necessary. The plotting chapters of CAD application manuals generally show the pin-outs of the Mac serial port, just in case.

Mel Badgett, Claris' product manager for Claris CAD, said he doesn't view setup problems as widespread but, he added, "We made a point of going into as much detail in the manual as we thought was useful so that people would be able to handle it themselves."

The manuals for PowerDraw and Versacad Corp.'s VersaCAD, for example, go even further, illustrating the appropriate DIP switch settings for a wide variety of plotters. "We try to document the plotters as much as possible — where the switches go and what that means," said Stanley. "Our users are professionals, and we have found that when they have a problem they turn to that chapter fast."

Similarly, responsibility for driving the plotter has fallen on application developers. "You don't have to sell plotter drivers to sell plotters, but you almost have to sell plotter drivers to sell CAD software," said Badgett.

Consequently, application developers have tended to go their own ways. The result is that plotter drivers come in many flavors — some are separate programs, some are routines built into the application and others are Rdevs (documents accessed through the Chooser, such as the ImageWriter and LaserWriter drivers). Separate programs that require the user to leave the application in order to plot are the least convenient option. The utility of an embedded driver is, of course, limited to the host application. The advantage of a Chooser-level driver is its accessibility from any application. It is the most Mac-like option.

"The big thing about Chooser-level drivers," said Joel West of Palomar Software, "is that Apple says this is the way to do it." Oceanside, Calif.-based Palomar now offers a Chooser-level driver called PLOTTERgeist. The only other product of this type is Slidell, La.-based Microspot's MacPlot, which is used by Claris CAD, among others. "Functionality and the ability to work within the Mac environment were the major considerations in our decision [to use MacPlot]," said Badgett.

Sometimes the plot also turns on the issue of compatibility. The actions of plotters are governed by the internal language of the machine. HPGL (from Hewlett-Packard Co. of Palo Alto, Calif.) and DMPL (from Houston Instruments of Austin, Texas) are the most commonly used description languages and are often emulated by other plotter vendors. Whether a plotter supports the full language or only a subset can make a difference in how it accepts a driver's instructions.

"There are degrees of compatibility," said Stanley. "A plotter may speak HPGL, but if [the vendor] left out some commands, it can create problems."

On the other hand, a driver that is compatible may not exploit all the features available in the hardware.

One positive step would be the inclusion of driver software with plotters destined for the Macintosh market. Movement in that direction seems to be under way. "Initially, printer vendors didn't see the need for drivers when entering the Mac market, but that changed," said Palomar's West. "Now we are seeing the same process begin to occur with plotter manufacturers."

So the picture isn't entirely bleak. Better integration of plotters into the Mac environment seems inevitable.

"The Mac is a graphics machine, and tying it to sophisticated output devices is important," said Badgett. "It has to be done well." □

Carlos Domingo Martinez is a technical editor at Macintosh-Aided Design, a new magazine on Mac-based CAD.

Moore

From previous page

But despite his overall enthusiasm for the application, Hirsch warned that it is not for everyone. "If you're a drafter or an architect and you're happy with 2-D, you don't need this software. Get something cheaper," Hirsch said. "But if you're a person who can think in 3-D, you can probably start to get some results in a few weeks. In our office, we fight over a tenth of a millimeter. If you're worried about precision the way we are, this is the program."

Hirsch said he hopes to write a program that will allow him to cross-reference files by client number to a spreadsheet program in order to automate billing.

"Right now, I'm doing on $15,000 worth of hardware what previously required at least $250,000," Hirsch said. "The implications are phenomenal." □

Chris Mario is a free-lance writer based in Princeton, N.J. In addition to writing about the Macintosh, he covers business and social issues.

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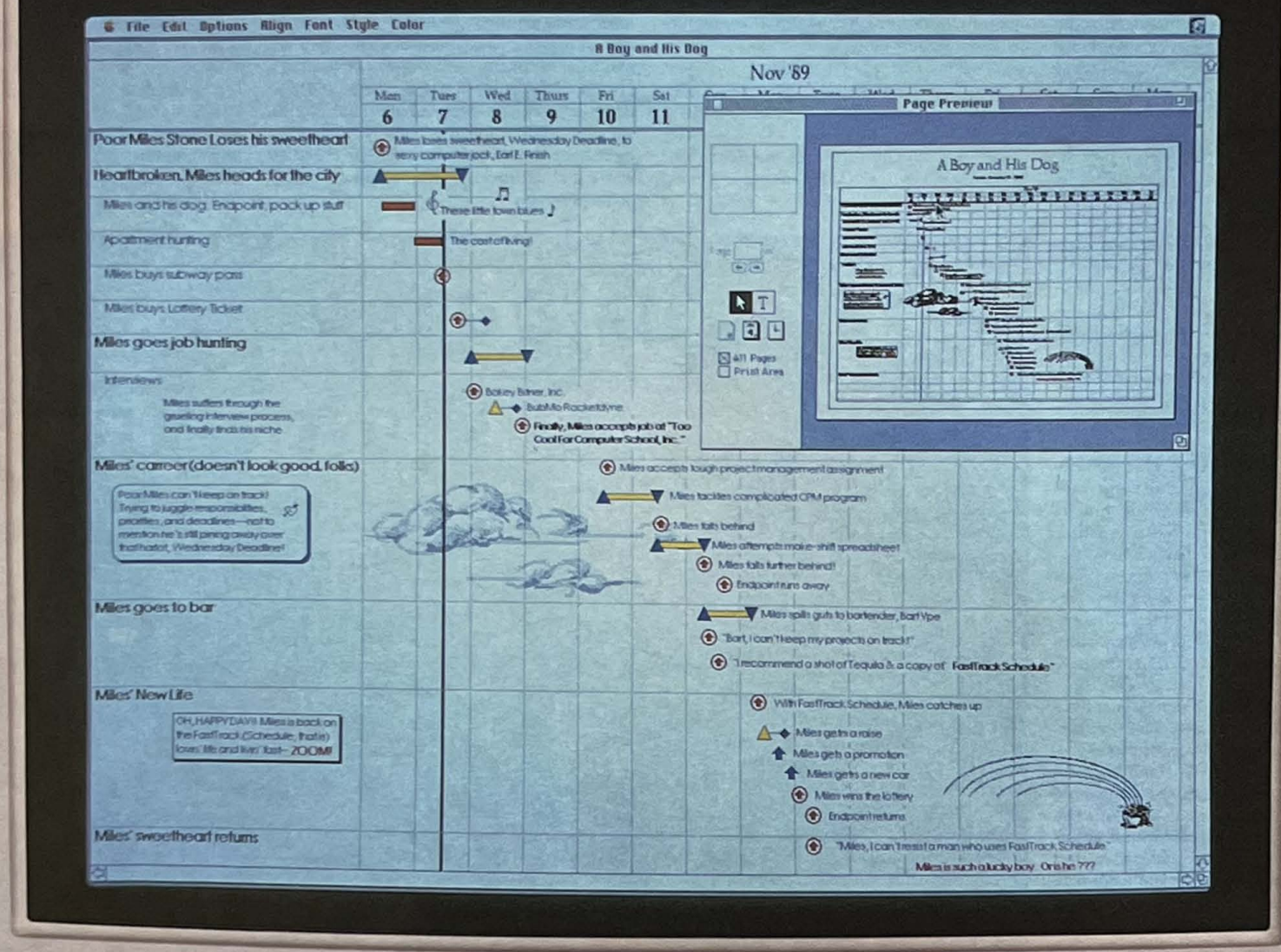
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A Boy and His Dog
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Tues 7
Wed 8
Thurs 9
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Sat 11
Poor Miles Stone Loses his sweetheart
Miles loses sweetheart, Wednesday Deadline, to sexy computer jock, Earl E. Finish
Heartbroken, Miles heads for the city
Miles and his dog Endpoint pack up stuff
These little town blues
Apartment hunting
The cost of living!
Miles buys subway pass
Miles buys Lottery Ticket
Miles goes job hunting
Interviews
Miles suffers through the grueling interview process, and finally finds his niche
Bakey Bitner, Inc.
BustMo Rocketdyne
Finally, Miles accepts job at "Too Cool For Computer School, Inc."
Miles' career (doesn't look good, folks)
Poor Miles can't keep on track! Trying to juggle responsibilities, priorities, and deadlines—not to mention he's still pining away over that hottot, Wednesday Deadline!
Miles accepts tough project management assignment
Miles tackles complicated CPM program
Miles falls behind
Miles attempts make-shift spreadsheet
Miles falls further behind!
Endpoint runs away
Miles goes to bar
Miles spills guts to bartender, Barf Vpe
"Barf, I can't keep my projects on track!"
"I recommend a shot of Tequila & a copy of "FastTrack Schedule"
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OH, HAPPY DAY!! Miles is back on the FastTrack (Schedule, that is) loves life and lives fast– ZOOM!
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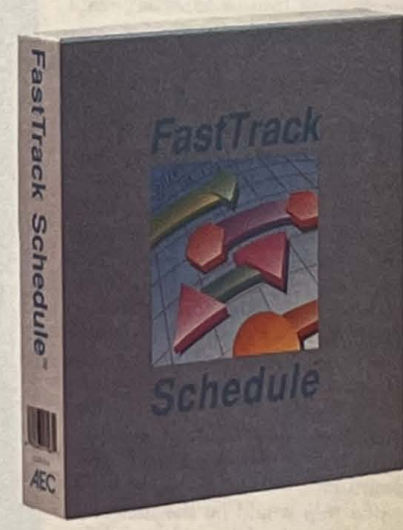

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COMPARISONS

CAD heavyweights seek to capture Mac market

Buyers can now take advantage of the Macintosh interface without dropping their investment in traditional CAD.

By Phillip Robinson

The Mac has been a design tool since MacDraw was first shanghaied into sketching a floor plan or a gear outline. The evolution of Mac CAD software has been gradual, developing from MacDraw successors — such as MacDraft — to more powerful and precise packages such as MiniCAD, MGM-Station and VersaCAD.

Through most of its history, the Mac has been isolated from other CAD platforms. Files could be translated into a vanilla format, such as IGES (initial graphics exchange specification), for transfer to or from other systems, but they couldn't be moved directly or completely. And Mac CAD programs shared little in command structure or approach with CAD packages on older platforms. Buying decisions were made on the basis of speed, features and adherence to the Macintosh interface.

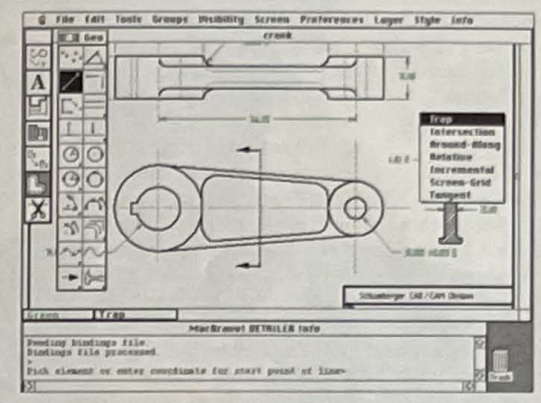
Requirements for a heavyweight. CAD heavyweights such as Autodesk Inc., Schlumberger Technologies and Intergraph Corp. have moved to capture Macintosh-wielding designers and engineers, particularly those working as mechanical engineers or architects in large corporations and engineering firms. Their new packages combine 2-D drafting and 3-D modeling and provide personal computer, workstation and minicomputer compatibility in files, features and menus. Buyers can bite at the Mac's advantages without dropping their investment in traditional CAD.

Autodesk's AutoCAD, Schlumberger CAD/CAM Division's MacBRAVO! and Intergraph's MicroStation Mac are complex programs that crowd the Mac display with menu titles, dialog boxes and status windows. Most also pack in a text command window for typing commands instead of using the mouse. They're accompanied by file translation utilities, sample drawings and voluminous documentation. Most are still lacking the latest CAD wrinkles from the workstation world, such as parametric design, document management and direct connections to analysis packages.

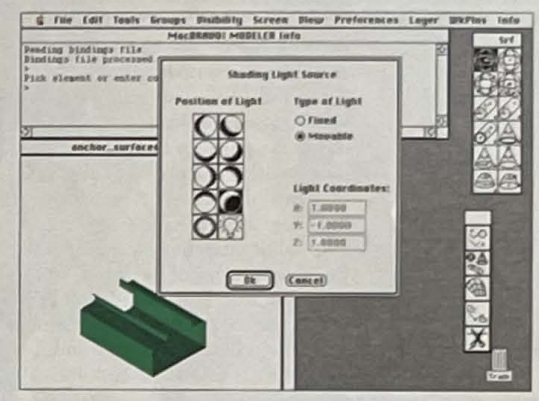
To run these programs you'll want as much processing power as you can get (most require a Mac II), plenty of RAM (most call for 4 to 8 Mbytes) and ample free hard disk space (the programs alone can occupy 5 Mbytes or more). A second display — or a 19-inch single display — a graphics accelerator, a plotter and a drawing tablet fall somewhere between "optional" and "recommended" with these giants. A typical price for this software power is $3,000, and most vendors sell through dealers who provide technical support as well. Training classes also are available.

AutoCAD Release 10. Throughout the 1980s AutoCAD was the dominant CAD program in the IBM PC market, and its move to the Mac was long-rumored. AutoCAD files, commands and extensions are compatible across all platforms, from Sun workstations to IBM PCs and Macs. That's a key reason to choose AutoCAD, even when you don't know what your clients and suppliers will be using. Everyone will have found ways to live with AutoCAD. AutoLISP, the programming language for customizing AutoCAD, has generated a strong third-party market for PC AutoCAD add-ons and extensions, although most of these companies have yet to port their creations to

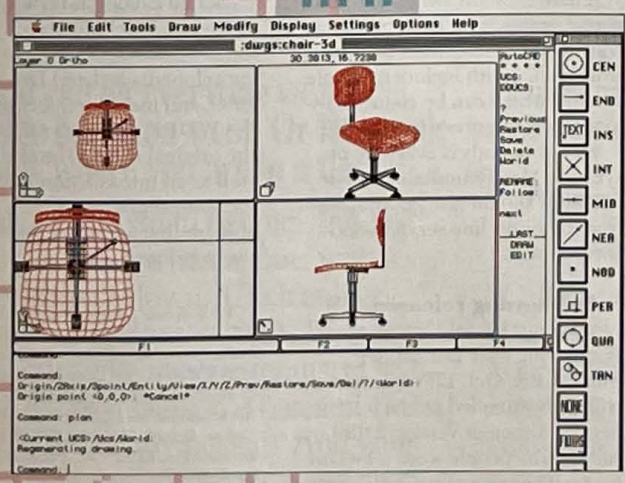
See Comparison, next page



MacBRAVO's Detailer deals in 2-D drafting, although it can flatten 2-D views from a 3-D model. While it lacks some Mac interface features, such as scroll bars, MacBRAVO! adds interesting new features, like the "click-and-a-half" pop-up constraints menu shown here.



MacBRAVO! Modeler starts with 3-D primitives for drafting and for creating wire-frame models, then offers lighting controls and several levels of shading for surface models. Shading a complex part can take several minutes.



AutoCAD can show several views at once; however, the views all fall within one window. AutoCAD menus, like the Tools menu here, tear off for convenient placement. The program can also be driven by the text command window (bottom) or the side menu.

In summary: CAD software

AutoCAD, MicroStation Mac and MacBRAVO! dominate the high end in general Macintosh CAD products, along with Versacad Corp.'s VersaCAD (see MacWEEK, April 29, 1988). These products have similar feature sets for 2-D drafting and 3-D modeling, and go for similarly hefty prices: about $3,000.

Autodesk Inc.'s AutoCAD, the slowest of the three programs reviewed here, has an impressive 3-D foundation that's hard to use, doesn't offer surface shading and swerves furthest from the standard Macintosh interface (although this may be just what experienced AutoCAD users want). However, AutoCAD has the largest third-party market, especially in the IBM arena, and an easily customized or specialized command set and interface.

Schlumberger CAD/CAM Division's MacBRAVO! suffers somewhat from having its drafting, modeling, plotting and file translation functions split into independent programs, and lapses from the Macintosh standard interface in places. On the other hand, MacBRAVO! earns high marks for extensive drawing and editing commands, HyperCard-based on-line help, an extension language, DXF (Drawing Interchange Format) and IGES (initial graphics exchange specification) support, and direct compatibility with Bravo3 minicomputer CAD software across a network.

Intergraph Corp.'s MicroStation Mac is the fastest of the three products reviewed here, and it follows the Macintosh style most closely. It has an extensive set of commands, an extension language and promising connections to database managers. MicroStation also offers the most concrete workgroup CAD support: Its Reference file and binary compatibility allow several designers to work on the same model, on different computers on a network, all at the same time.

The environment you're buying for is a critical factor in the CAD purchase decision, but putting that consideration aside, we found MicroStation the best bet for all-around 2-D drafting and 3-D modeling.

Comparison *From previous page*

the Mac. The program isn't copy-protected, although the international version does sport a hardware lock.

Because AutoCAD preserves its menus across platforms, it is easy for a PC AutoCAD user to jockey Mac AutoCAD. (Even the manuals remain the same as for the PC, with slight touch-ups for installation differences.) Unfortunately, that preservation doesn't permit AutoCAD for the Mac to have a true Mac interface flavor. This is probably the toughest of the three programs for a Mac-only user to learn.

The text command window and the drawing's horizontal command menu, standard on PCs, are accompanied on the Macintosh by pull-down menus. You can direct a good part of the action from these pull-down menus, but you'll find yourself typing many command details anyway. For example, you can choose Plot from a pull-down menu, but then the selection of what and how to plot must be typed on the keyboard. You'll notice that pull-down commands often merely initiate macros that type commands on the command line, slowing performance.

There are no scroll bars on the graphics window; object selection doesn't follow Mac standard practice; cut, copy and paste are not fully implemented; and many dialog boxes avoid Mac conventions. There is no tool palette with icons. On the other hand, you can customize the menus any way you like. You can also build menus for a drawing tablet, which would let you avoid the screen's command tangle. However, AutoCAD doesn't support the Mac's Apple Desktop Bus (ADB) port, so any tablet must be plugged into the printer or modem port.

Two-dimensional drafting has long been AutoCAD's turf, and the Mac version offers most of the basic features you'd expect and many that you'd hope for. Zooming is flexible and fast, and Undo works through multiple steps on just about any AutoCAD operation (some CAD programs only undo new objects and deletions, not object manipulations). There are some curious lapses, though, such as no rectangle-drawing primitive, no double-line tool, no dynamic tangents or perpendiculars, and a trim command that doesn't automatically trim lines at intersections. Grouping objects isn't as smooth as with most Mac drawing programs, you can't paste in PICT graphics from the Clipboard, and there is only one fill pattern, although a number of hatch options are available. All visible layers are editable — there's no way to lock a layer. Objects cannot be selected by attribute. And there are no PostScript or QuickDraw text fonts. All these deficiencies can be remedied by AutoLISP routines, but that slows performance and forces you to buy third-party software or write them yourself.

Release 10 of AutoCAD has commands for 3-D drafting, wireframe modeling and some surface modeling, but it doesn't make these tasks easy. There are extruded and ruler surfaces; quadratic, cubic and Bezier mesh surfaces; surfaces of revolution; tabulated cylinders; surface patches; and 3-D polylines as well as a few standard 3-D objects. To use them, you must learn and understand the flexible viewing and perspective options, and the surface node placement commands. You customize views with a user-coordinate system and all views appear in a single window, limiting the practical number. Hidden-line removal is an option, but there are no shading abilities or true solids modeling — these wait for Mac versions of the separate AutoShade and AutoSolid modules, which may coincide with Release 11 of the program or appear independently in late 1990. Nor are there animation abilities for walk-through or fly-by views. 3-D work isn't fast; even the dialog boxes for it are sometimes annoyingly slow to appear because they are drawn with vectors instead of standard QuickDraw rasters.

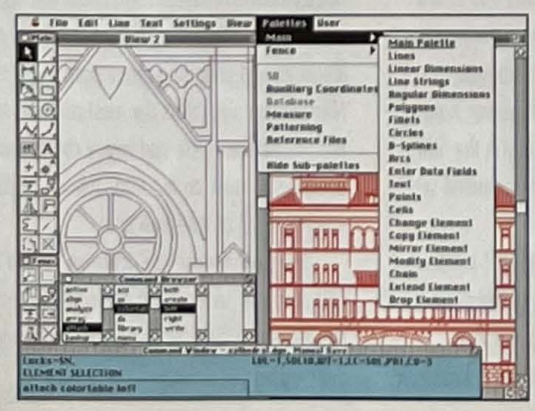
Overall, AutoCAD offers the best compatibility with PCs and a huge installed base across PCs, workstations and Macs. It starts with a time-tested platform and adds extensible and flexible menus, commands and routines. Powerful 3-D operations are added to a firm 2-D base, although they aren't smoothly integrated or easy to use. Also, there are some empty drawers in the drafting toolbox when compared with MacBRAVO! or MicroStation Mac. But the biggest difference is in the interface: AutoCAD has the least Mac-like interface of the three programs compared here. This won't matter to AutoCAD fans coming from other platforms, and it might not matter to a drafter who will use it day in and day out, but it will surely matter to the infrequent user or the dyed-in-the-wool Macintosh user. The overhead of the graphic interface cuts AutoCAD's speed, too. It will probably feel slow to a PC user accustomed to the zip of a specialized display-list graphics controller. AutoCAD is slower than both MacBRAVO! and MicroStation Mac.

MacBRAVO! 2.0. Schlumberger's line of CAD software dates back to 1969 and used to be offered under the name Applicon. The flagship program, Bravo3, runs on VAX minicomputers and workstations. MacBRAVO! is a Macintosh subset of Bravo3 and is marketed as a series of programs. Detailer is a mechanical drafting program for 2-D design. Modeler is a 3-D modeling package that builds on Detailer. IGES is an independent file translation utility. MacBRAVO! Design is a bundle containing all three modules at a discounted price. MacBRAVO! asks for the most hardware of the packages in this review, requiring a Mac II with 5 Mbytes of RAM (8 Mbytes are recommended) and a 40-Mbyte hard disk. The program's on-line help comes as a HyperCard stack, but since it includes HyperEngine, you can use it directly from MacBRAVO! without MultiFinder. Version 2.0 of MacBRAVO! adds the ability to share files with Bravo3 across an Ethernet LAN.

MacBRAVO! 2.0 is the least integrated package of the three in this review. Drafting is done in Detailer, modeling in Modeler, plotting in four separate utilities (one each for Hewlett-Packard, Houston Instruments, Schlumberger and LaserWriter output), on-line help in a HyperCard stack and IGES translation in four more utilities (one each for moving files to and from Detailer and Modeler). DXF (Drawing Interchange Format) import and export is part of the Detailer package. MacBRAVO! follows the Macintosh interface more closely than AutoCAD does, but less closely than MicroStation. For example, the tool-category palette that in turn leads to more-specific tool palettes could come from any Mac drawing program. The actual display window for images, however, doesn't have scroll bars or standard element selection by clicking. Cut, copy and paste apply only to text. There are standard dialog boxes and separate palettes for setting dimension options or crosshatching. Pop-up menus for color and selection constraints (such as intersection, incremental and tangent) are available in Detailer. Choices you make in pop-up menus and palettes prompt text window commands.

MacBRAVO! also has a couple of interesting interface features unique in Macintosh CAD. You can bring up the Constraints menu by a "click and a half" anywhere on the display, an interface fillip popular in work-

See Comparison, Page 48



Unlike AutoCAD, MicroStation Mac's views can occupy independent windows. Some of the complexity of MicroStation can be seen here. A full menu is necessary just to list the various main command palettes.

MacInTouch

RIC FORD AND RICK LEPAGE

Capturing PostScript, enabling Finder sounds

BUGS & TIPS

Capturing PostScript. By using a special technique, you can capture the PostScript language instructions for printing a Mac document in a text file. This file can then be viewed, modified and downloaded to a PostScript device for printing. It can also be transferred to a different computer, such as a NeXT machine or another computer that has a PostScript device attached to it.

Pressing Command-F or Command-K after clicking the OK button in a standard Print dialog box captures the PostScript code instead of printing the document. The standard LaserWriter status box informs you that a PostScript file is being created, and the file is created on disk with a name like "Postscript0."

Command-K works just like Command-F except that it includes the PostScript dictionary from Apple's Laser Prep file, which is normally downloaded to a PostScript printer when you see the Initializing Printer status box.

One hitch with this procedure is that it does not work when using MultiFinder's background printing facility. The simplest solution is to select your LaserWriter with the Chooser and then click on the Off button to disable background printing. An alternative is to restart the Mac and hold down the Command key to bypass MultiFinder.

PRODUCTS

Sonic Finder. The Macintosh's sound capabilities have been tapped in a few places to enhance the user interface, but we have yet to see a full "sonic Finder" from Apple.

KEVIN BERGER

However, Greg Smith and Chris Weber at Bucknell University in Lewisburg, Pa., have discovered some hidden audio features in System 6.0.4 and Finder 6.1. and have written a freeware program that enables them.

Finder Sounds consists of a Control Panel device (cdev) and a Start-up document (INIT) that add digitized sounds to operations such as emptying the trash, scrolling, and opening or closing a window.

A master on/off switch and individual switches for each operation control the sounds from the Control Panel. Smith included sample sounds, which can be changed by modifying resources in the INIT.

Finder Sounds is available on GEnie's Mac Roundtable as File 15998. It should also be available from other on-line services and users groups.

Boomerang released. We raved about Hiroaki Yamamoto's Boomerang cdev last fall (see MacWEEK, Oct. 17) while it was still in its extended public testing period. Although Version 2.0B9 was solid, many people were reluctant to use it because of its "beta" connotations. That problem has dissolved with the release of Boomerang 2.0.

Boomerang adds a number of much-needed functions to Apple's Standard File dialog box (the one used to open and save documents). The best part about the program, and the reason we use it, is that it operates in a Mac-like way that is customizable to fit your habits.

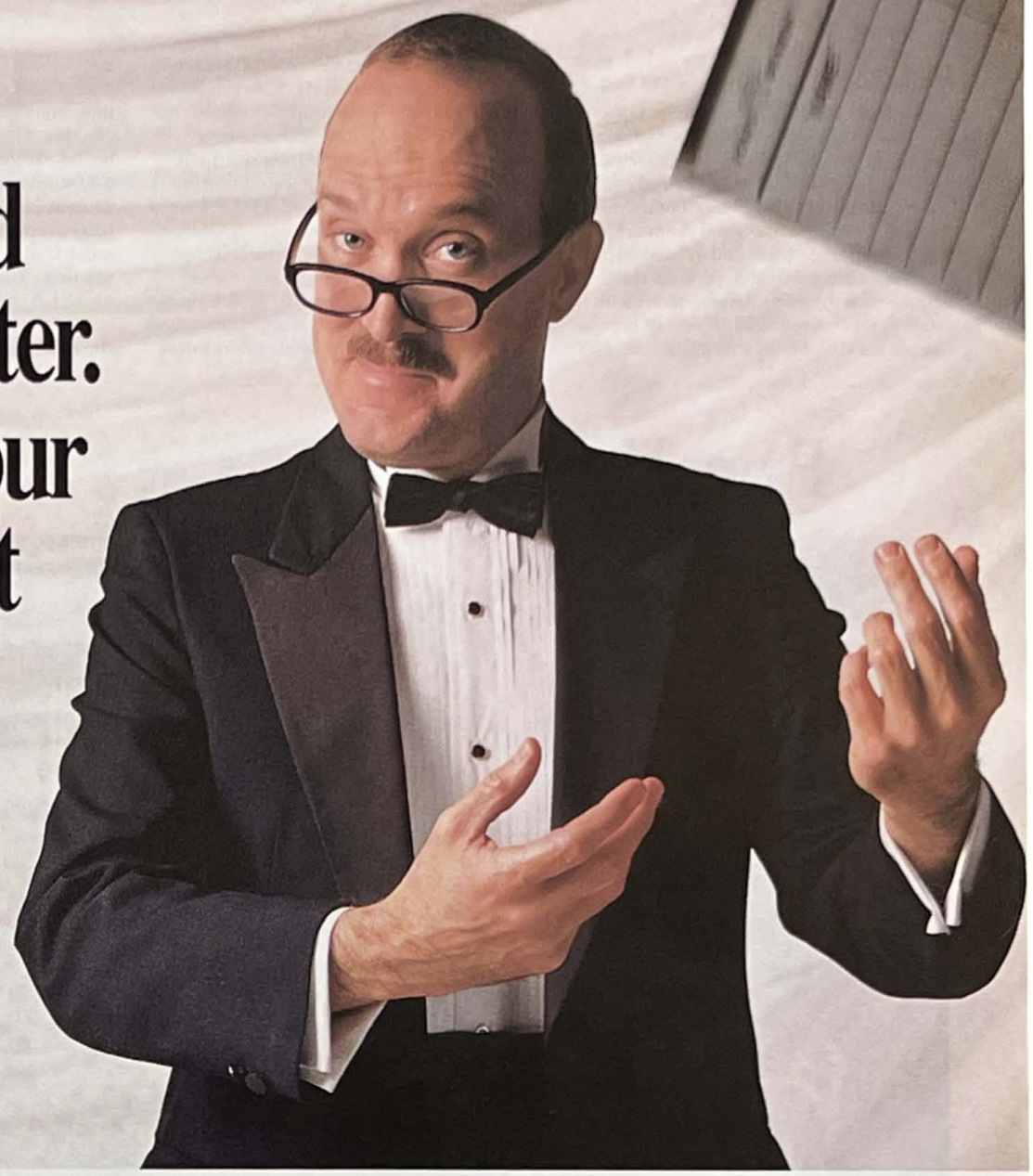
During the transition from beta to release version of Boomerang 2.0, Yamamoto did an excellent job of quashing bugs. He also avoided the temptation to cram feature after feature into his product, a problem that many developers can never seem to overcome. The documentation is clear, and Yamamoto's company, Zeta Soft, offers telephone technical support, a rarity in the shareware community. The result is a Mac classic, a bargain at $30.

Virus stack update. Henry C. Schmitt and the NorthWest of Us users group have released an updated version of the Virus Encyclopedia, a nicely done HyperCard stack that catalogs Macintosh viruses and techniques for preventing or removing them. The latest encyclopedia is dated Dec. 12, 1989, and includes information on the WDEF virus and variations of the original nVIR. The stack serves well as an introduction to viruses for non-programmers. It is available on-line and from Macintosh users groups.

We welcome comments at MacWEEK, 4 Cambridge Center, Third Floor, Cambridge, Mass. 02142; (617) 497-2600; (617) 497-2646 (fax). Electronic mail: CompuServe: (Ric Ford) 75410,2612, (Rick LePage) 76117,1765; GEnie, America Online, Delphi, PAN: MACWEEKBOS. Connect: RICKLEPAGE, RICFORD; AppleLink: (address to "MacInTouch" in Subject): MACWEEK; Internet: MACWEEKBOSTON@MCIMAIL.COM; MCI Mail: MACWEEKBOSTON.

Dr. Productivity Says:

"You trashed your typewriter. Now trash your office in/out board."



"Never wonder where the heck George went again."

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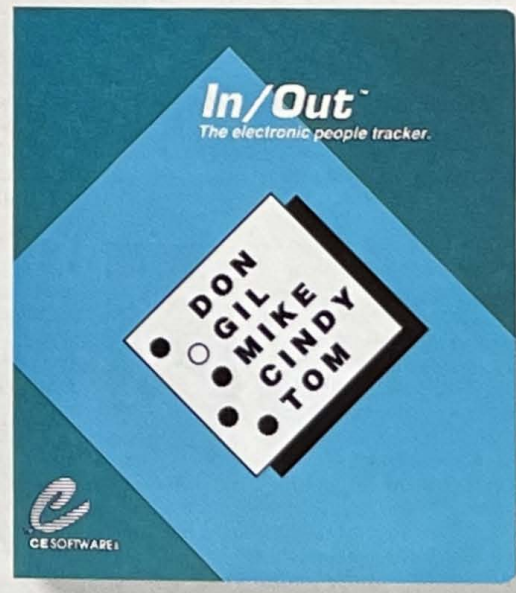

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Comparison

From Page 46

station CAD. And holding down the Option key while dragging the mouse through a certain shape lets you zoom or change views.

The Detailer offers primitives and editing commands through typed input or mouse position. There are fillets and chamfers, grid and scale settings, trims and extensions, seven standard crosshatch patterns and a custom-pattern option, layers, movement, rotation, and mirroring of objects or groups. Classes set visibility by major drawing-element types such as dimensions, annotations and geometric objects. Files can be used as templates or as shape "symbols" within new files. Customization comes through the FIT (Flexible Interface Tool) programming language and by editing the text files that configure MacBRAVO! A separate FIT developers' package is available. A Journal file of FIT commands can be kept automatically to re-create a work session.

Detailer has text for annotating drawings but doesn't offer standard Mac text fonts and styles. The Dimensions palette offers linear, angular and radial automatic dimensions as well as several formats, but not associative dimensions that change when an object changes. The Detailer has 3-D commands for loading Modeler or Bravo3 drawings into a 3-D window, where you can rotate them and generate 2-D views of the model. Unfortunately, throughout all Detailer work you can see only a single window and drawing view at a time. There are six standard views, including one 3-D view.

Modeler follows the same interface and commands scheme as Detailer, exchanging 3-D primitives for 2-D, adding surface creation commands and letting you fill the single window with a choice of view ports to look at a model from different angles. There's also the option of creating, naming and activating Work planes to define the local coordinates for 3-D models. Hidden-line removal and shading commands, including lighting controls, are part of Modeler as well.

In sum, MacBRAVO! isn't as fast as MicroStation, but the Detailer can outrun AutoCAD, and the Modeler at least matches it. Both have very precise 64-bit IEEE-standard (Institute of Electrical & Electronic Engineers) floating-point 3-D databases. MacBRAVO! has a big demand for RAM; many independent files and programs between drafting, modeling, translating and plotting; and lacks explicit digitizer support and associative dimensioning. Also, a year of telephone support from Schlumberger can cost $495. But there are lots of drawing primitives and editing commands, an extension language, shading controls with lighting, and both IGES and DXF support. The Bravo3 line also provides links to CAM software. MacBRAVO! will certainly sound good to Bravo3 users and is a viable competitor for AutoCAD and MicroStation.

MicroStation Mac 3.5. Intergraph is one of the largest CAD companies in the world, and its IGDS (Intergraph Geometric Design System) software for workstations is well-known in the corporate arena. MicroStation Mac 3.5 is a direct descendant of IGDS, as is MicroStation for the PC, and is fully compatible with it. MicroStation is aimed largely at mechanical engineers and architects. It combines drafting, wire-frame and full-surface modeling abilities with shading and rendering.

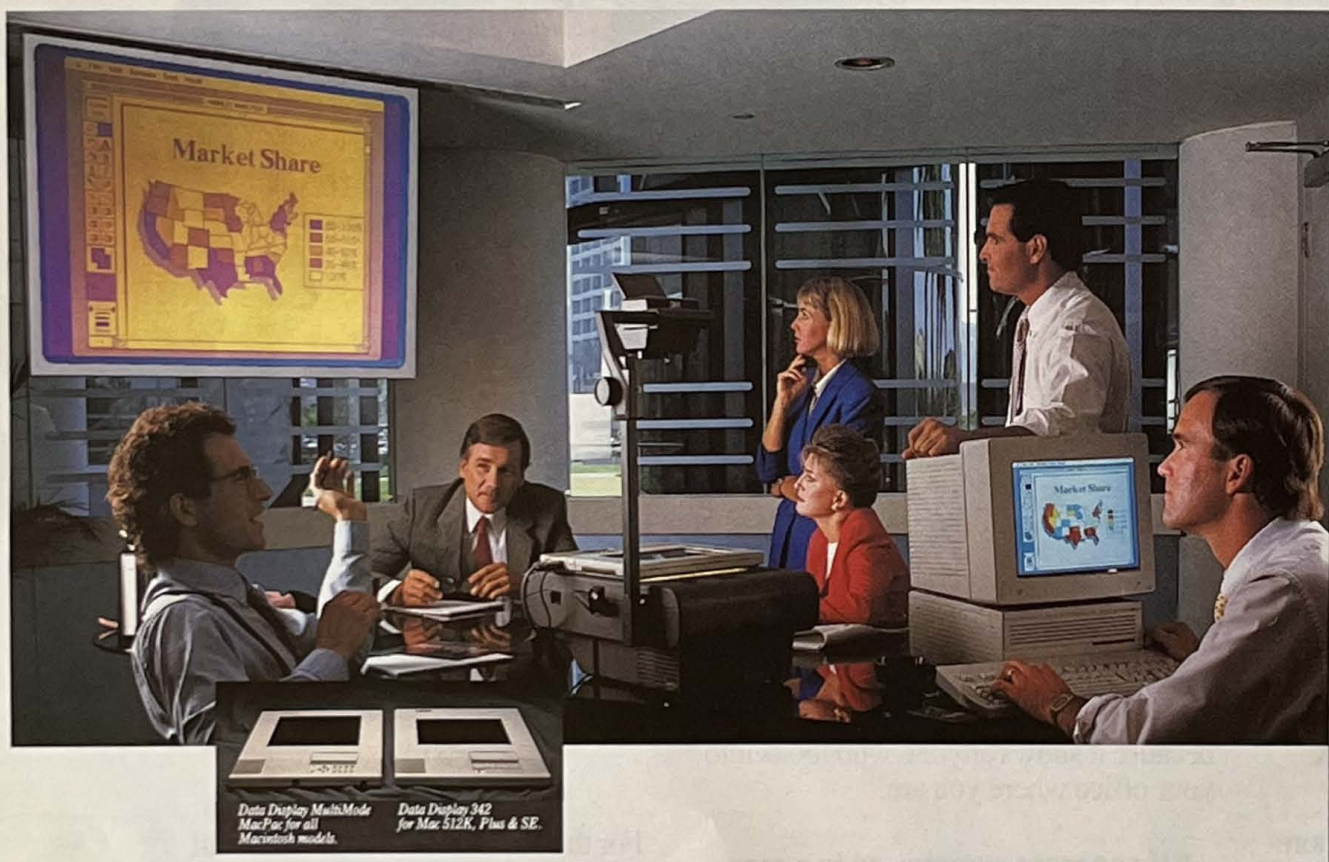
MicroStation demands the least RAM of the three heavyweights, asking for only 2.5 Mbytes. However, it is the only one of these programs with a copy-protection scheme: an ADB port hardware key.

MicroStation's interface is not only fully Mac-standard but also adds some touches that could define future Mac interface guidelines. For example, there's a Command Browser window that resembles the browser of the NeXT workstation. Here, you select command categories, then individual commands, then parameters for the commands, all by scrolling and clicking on lists.

MicroStation also implements standard Clipboard object selection and cut, copy and paste schemes, including putting handles on objects for mouse manipulation. Full support for ADB input tablets also is provided. Up to eight active views can be open in independent windows, with different layers visible in each. Because the windows are all active, you can start a drawing operation in one and finish it in another. MicroStation also has hierarchical pop-up menus and standard dialog boxes with pop-up lists, providing a familiar feel to any Mac user. Standard Macintosh text fonts and styles are there, too. You can stick with your mouse much more than in AutoCAD. Perhaps the only drawback to MicroStation's interface is crowding: There are too many palettes, menus, dialog boxes, tools and options. Sometimes, a dozen of them will be visible at one time. To keep organized with MicroStation, you truly need a 19-inch display or a second monitor.

A User Command Operator language and macros are available to extend and customize MicroStation Mac. For those with even more programming in mind, Bentley Systems, with Intergraph, offers Micro-CSL, a Customer Support Library of C-callable routines for developing specific applications. There's also support for links to the Oracle database

Power Meeting.



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for analyzing information in a model. The ability to read and write PICT and DXF files is built in, but there is no built-in IGES support. Seed files save settings and configurations for use when starting new drawings. Seed files for architecture, mapping and mechanical engineering come with MicroStation. Continuous saving is another valuable option, in which changes are saved to disk as they are made.

Drafting and modeling are smoothly linked in MicroStation. There are hundreds of primitives and hundreds of commands to feed the two processes. Choices abound. Even in simple line attributes, there are 16 weights, 256 colors and eight styles. When placing a point, you can use tentative snapping, which shows you where the point will fall but lets you nix the act before it's finished. For object selection, you can work with several fencing styles (ways to draw a marquee around objects). The Undo command can work back to the beginning of drawing, and you can directly edit object attributes or customize auxiliary coordinate systems in a dozen ways. A Cell Library contains hundreds of useful patterns, especially for architecture. You can choose to paste and copy from a PICT file or from the Clipboard, save the result as an object or bit map, and scale and rotate it. For 3-D work, MicroStation offers wire-frame and surface primitives and commands, hidden-line removal, shading, and lighting controls for all or part of a drawing.

A crucial advantage of MicroStation for networked design teams is its Reference file capability. Any drawing can have a Reference file and up to 32 attached drawing files, each drawing file with 63 layers. Changes made to the attached files dynamically update over the network to any MicroStation site — PC, Mac or workstation — that's working from the same Reference file. That can save a lot of communication time and document management frustration for a workgroup. For the individual, MicroStation is fast, opening files and zooming in half the time of AutoCAD.

There is no utility for gathering and animating rendered images for walk-through or fly-by presentations. And for drafting, the Automatic Dimensioning feature in MicroStation may offer a wealth of formatting options, but they aren't associative or easy to understand — a major weakness compared with the other programs reviewed here. Another hole in the MicroStation fabric is that although you can measure lengths, angles and areas, there are no analysis commands for moments of inertia or other sophisticated mechanical attributes of a model or object. Nor is there any on-line help in sorting out the hundreds of commands and options.

Clearly, if you're working with IGDS on VAX minicomputers, MicroStation would be the best way to add Macintoshes. Along with MacBRAVO! it offers more workgroup and network support than AutoCAD or most other Mac CAD packages. There are a few missing pieces, noted above, but MicroStation Mac is fast, smoothly integrates 2-D and 3-D work, offers multiple active windows, adheres to the Mac style, and has a long list of features.

Conclusions. How do you choose between high-end drafting and modeling programs such as these? Features and speed aren't the only benchmarks anymore. All these programs have a huge repertoire of commands, but you should look at your particular task to see if that special dimensioning talent, rendering ability or crosshatching feature you need is in the program you're considering. Certainly, speed always matters, but the raw time it takes to zoom a screen must be put in the context of the time it takes to call up a symbol, refer to a base layer, move files from one system to another, and communicate with other steps in the design process.

Macintosh CAD is rarely isolated anymore. If you work in a shop, or with colleagues and clients who have a particular system, you should seriously consider following their lead as long as their program of choice has the features you absolutely need. Also remember that wanting a comfortable interface is not just a whim — it's vital to productivity, whether you prefer a full, graphically rich Mac-standard interface or a crisp, PC-style text command window. These three programs take different approaches to organizing and presenting the many commands a designer needs. □

Product Info

AUTODESK INC.
AutoCAD Release 10: $3,000
2320 Marinship Way, Sausalito, Calif. 94965; (415) 332-2344

INTERGRAPH CORP.
MicroStation Mac 3.5: $3,300
One Madison Industrial Park, Huntsville, Ala. 35807; (205) 772-2000

SCHLUMBERGER TECHNOLOGIES, CAD/CAM DIVISION
MacBRAVO! 2.0: $1,495 (Modeler); $1,995 (Detailer); $495 (IGES); $3,295 (all three modules)
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REVIEWS

DesignStudio takes on page-layout goliaths

DesignStudio

Letraset
List price: $795; upgrade for Ready,Set,Go! customers: $250

+ Rich set of typographic controls; good style-sheet mechanism; text and graphic objects can be set in a number of pre-defined shapes; vertical justification.

− Poor manual; interface inconsistencies; style sheets must be removed to apply new characteristics.

By Rick LePage

While the Macintosh desktop publishing and pre-press market continues to show signs of steady growth, the high end of the page-layout market is still bulwarked by Aldus Corp.'s PageMaker and Quark Inc.'s QuarkXPress. The low end is teeming with competitors, but the twin pillars of Aldus and Quark appear to scare off newcomers, despite the grumblings over PageMaker's lack of typographic precision and XPress' cumbersome interface and complexity. See MacWEEK, May 17, 1988 (PageMaker 3.0); Nov. 29, 1988 (QuarkXPress 2.0); Sept. 26, 1989 (PageMaker Color Extensions).

Letraset has been trying to muscle in on this market segment since 1987, but with limited success. While Ready,Set,Go! has been around since 1986, it has generally been perceived to lag behind the leaders.

Attempting to overcome this perception, Letraset bypassed the Ready,Set,Go! name with the release of DesignStudio, its second-generation page-layout software designed to go head to head with PageMaker and XPress. The company hopes to bolster this attack with a group of programs aimed at the design professional. In addition to DesignStudio, this series includes two existing programs and two new ones. The established products are ImageStudio, for black-and-white image manipulation, and LetraStudio, which is used to set display type. The other new programs are FontStudio, used to create PostScript fonts, and ColorStudio, for color image manipulation.

DesignStudio, priced at $795, is intended to be the flagship product of the line, and, as such, it has the prerequisite features that designers are looking for: fine control over typographic elements (often to the thousandths of an em space); text and graphic runarounds; import of Encapsulated PostScript (EPS), TIFF and color images; rotation of objects; spell checking; automatic hyphenation; and full-color support. Unfortunately, in our opinion, it falls a little short as a second-generation desktop publishing package and instead sits in between PageMaker and XPress as yet another layout program that might be good enough to snare new users but will cause few established designers to switch to it.

The basics. Users familiar with either PageMaker or XPress should feel at home with DesignStudio. DesignStudio uses a grid-and-block system similar to XPress, which means that, to lay out text or picture objects, a block must first be set up to receive those objects. Like PageMaker, DesignStudio has an electronic "pasteboard" that the page is built upon, and objects can be stored on the pasteboard for quick placement on any page. Like both programs, DesignStudio has a powerful style-sheet mechanism for applying font or other typographic information to text.

Text blocks can be linked across pages easily, but this process means that users have to go through an extra step to automatically lay out page after page of text from a word processing document. Letraset has provided a way to duplicate pages, and the linked blocks on them, so a limited "autoflow" can be created.

DesignStudio can import documents created by a wide range of Macintosh word processors and generally will keep all formatting information intact. In addition to standard ASCII text files, DesignStudio can import files created with all versions of Microsoft Word and Works; Claris Corp.'s MacWrite 4.5 or 5.0 and MacWrite II; WordPerfect Corp.'s WordPerfect; and any version of T/Maker Co.'s WriteNow. DesignStudio's text file import feature also has the ability to apply style sheets through the use of style tags and to convert typewriter-style quotation marks and spacing information into proper typographic elements.

Graphics, color support. DesignStudio has a limited set of design tools for creating lines and objects, but most graphic elements will need to be imported directly into a document. DesignStudio can import PICT, PICT2, TIFF, RIFF (Letraset's raster image file format), EPS and MacPaint files. Black-and-white TIFF and RIFF images can be adjusted for contrast, brightness and levels of gray.

DesignStudio can import full 24-bit color images without problems and uses a virtual-memory technique to display images without taking up precious RAM. What DesignStudio cannot do, however, is full-color process separations. It has a provision for performing spot color separations, but users who want to link to a pre-press system will have to print their DesignStudio files as PostScript and use a third-party utility.

Additions to the canon. While DesignStudio sits well next to QuarkXPress and PageMaker, it does have a few features that elevate it past either of its main competitors. The main enhancement we liked was the style sheet. Unlike PageMaker or XPress, which apply styles on a paragraph-by-paragraph basis, DesignStudio can apply styles at the character level. This power is a double-edged sword, however, because once a style sheet has been applied to a piece of text, that text cannot be manipulated without first "removing" the style sheet from the text.

For designers used to changing a word's font, size or style quickly and easily, this process adds another step. While we can see the benefit of locking text, it would be nice to have the option of DesignStudio automatically removing a style sheet and applying new attributes without informing users that they have to remove the style first.

Among the unique features that DesignStudio offers are:

- The ability to set a text or object block in one of 16 predefined shapes, including circles, ovals, parallelograms and triangles. There is no way to create your own shapes, however.
- A Copy Format command that copies the type attributes of a selected block of text. When used with the Apply Format command, this provides a method for quickly applying a font or style to text throughout a document without having to create a style sheet.
- A powerful rotation command that allows multiple objects to be rotated around their common center or around any point on a page.
- Vertical justification, which automatically adds leading between lines in a text block to make the text evenly fill the block.
- A command that builds proper fractional numbers from selected text.

Limitations. While there are some impressive points in DesignStudio, there were also a few areas that bothered us. Chief among them were the manuals, which look impressive but are poorly implemented. Some aspects of the program are barely mentioned or explained beyond the fact that they exist. An example of this is the Preferential Hyphens attribute in the hyphenation dialog box: We were unable to get a satisfactory explanation for its use anywhere in the manuals.

The program is not fast, and there were times when elements on a page were not updated properly when the screen refreshed, especially in enlarged-screen modes.

There also are a few rough edges in DesignStudio's interface. An example is the Find/Change dialog box, which is cluttered and confusing. Text, fonts and even style sheets can be searched for and changed, but the process is anything but intuitive.

Another interface peculiarity occurs with vertically justified blocks. Though the justification appears when the block is not

See DesignStudio, Page 52

The DesignStudio main window showing the tool palette across the top, rulers and grids, and full-color graphics.

Reviews in Brief: COACH PROFESSIONAL • PANORAMA

Coach Professional 3.1

As a language reference system integrating a spelling checker, definition dictionary and thesaurus, Coach Professional earned high marks when we first reviewed it (see MacWEEK, April 19, 1988) and in our recent comparative review (see MacWEEK, Dec. 5, 1989). But we had some reservations about its rather archaic thesaurus, overly complex user interface and unfriendly documentation. Also, we noted that Coach worked only with a limited range of applications.

Deneba Software's new Coach Professional 3.1 addresses all these concerns in a most effective manner. The program now incorporates the same modern, comprehensive word list as Deneba's BigThesaurus — a utility we concluded was the best in its class. And Deneba now includes Merriam-Webster's 30,000-word technical library with Coach Professional, in addition to its medical and legal dictionaries.

Coach 3.1's user interface has been simplified and is much more configurable by the user. And its manual has been completely revised and improved. The spelling checker is now compatible with a wider range of applications, including Microsoft Word 4.0, Works 2.0, MacWrite II, WriteNow 2.0, MindWrite 2.0, MORE II, HyperCard, QuarkXPress 2.1 and Ready,Set,Go! 4.5. It also works with PageMaker 3.0 but only in its interactive checking mode.

We particularly like Coach's new Control Panel interface in which you can specify those applications in which the utility will be launched automatically. It's a small convenience but helps to make Coach feel more like an integral part of your word processor or layout program, rather than just an add-on.

Coach Professional 3.1 retails for $195. Those who bought earlier versions after Aug. 1, 1988, will automatically receive a free upgrade; the charge for other users is $30.

Deneba Software is located at 3305 N.W. 74th Ave., Miami, Fla. 33122; (305) 594-6965; (800) 622-6827. — *By Dennis Klatzkin*

Panorama 1.5

ProVUE Development Corp. has been offering Macintosh database products — first OverVUE and then its successor, Panorama — for almost as

See Reviews in Brief, Page 52

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DesignStudio

From Page 50

selected, if you click the text editing cursor in the block, it reverts to double-spaced text, which detracts from the program's general WYSIWYG approach.

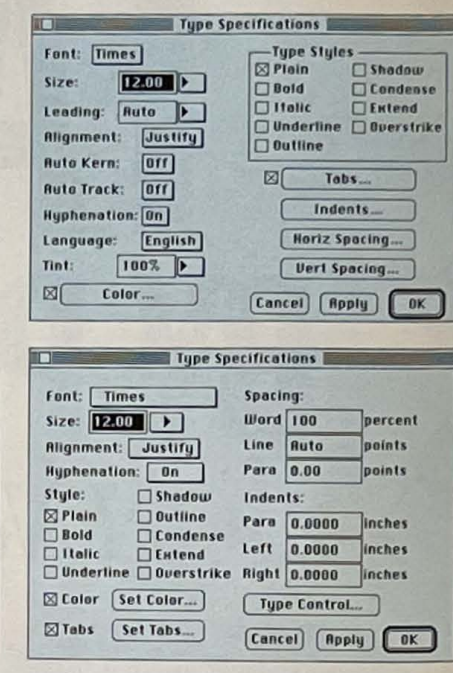
Conclusions. It is hard for us to get excited about DesignStudio in its current form, although it has a number of features that neither XPress nor PageMaker have, such as character-level style sheets, vertical justification, on-the-fly fraction creation and powerful rotation functions. For someone new to page layout, DesignStudio is worth consideration, but we feel that few users of other products will jump ship to use DesignStudio.

Letraset has been quick to distance DesignStudio from Ready,Set,Go!, but the company has used the earlier program's look and feel as the base for building the new program. This gives DesignStudio a sense of continuity with Ready,Set,Go!, an important characteristic since Letraset intends to continue selling Ready,Set,Go! as a more general-purpose publishing program.

The link with Ready,Set,Go! gives DesignStudio a distinct disadvantage, however, since little has been done to boost Ready,Set,Go!'s interface past its clunky feel. In fact, it is hard for us to believe that it is a truly different program from Ready,Set,Go!; it seems more like a major upgrade with a price increase.

Reportedly, both Quark and Aldus are hard at work trying to extend their market share with major upgrades of their own products, although it remains to be seen whether they will leap past the constraints of current layout packages. These plans do not bode well for Letraset, however. Unless the company can unveil a layout program that truly goes beyond the state of the art, Letraset will find itself in the same position it has been in for the past two years: behind the times.

Letraset is located at 40 Eisenhower Drive, Paramus, N.J. 07653; (800) 634-3463. □



The DesignStudio type specifications box (above top) reveals its origins in Ready,Set,Go! (above bottom). This similarity of look and feel permeates the DesignStudio interface.

Reviews in Brief

From Page 50

long as the computer has been around. The current entry is a unique program, even in the well-populated world of Macintosh databases, incorporating many features you'd normally expect to find only in a spreadsheet.

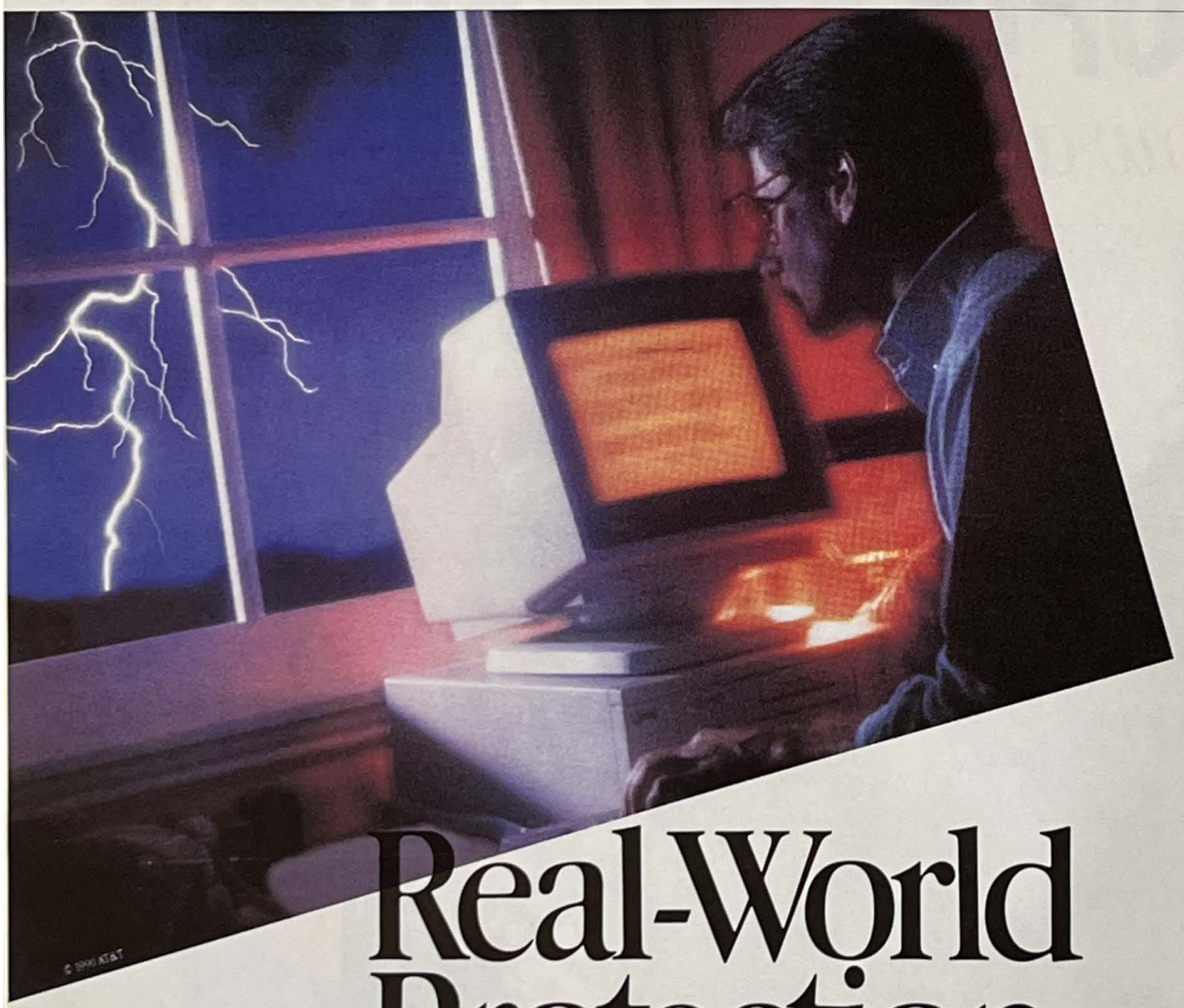
ProVUE's new Panorama 1.5 builds upon an already strong set of features and improves performance in the process. The new version supports tables of line items (such as those in invoices), variable height records and multiple page forms. Its equation handling, macro and Flash Art features have been enhanced significantly, and there's a new option to select data by phonetic matching. The program's Lookup function for referencing data from a second file is now more flexible, improving Panorama's quasi-relational capabilities.

One weak aspect of Panorama has been the manual's lack of a basic, concise tutorial. ProVUE has addressed this shortcoming by offering a 38-page pamphlet called "Building Your First Panorama Database." It's an excellent learning guide, clearly written and lavishly illustrated. It's packaged with current versions of Panorama; existing users will have to order it separately from ProVUE for $6.95, but it's well worth the price.

We think there's still room for improvement in Panorama's feature set (see MacWEEK, Feb. 28, 1989), but nevertheless it's a high-quality, high-performance product that keeps getting better.

Panorama 1.5 retails for $395. If you purchased an earlier version after Oct. 1, you're entitled to a free upgrade; other users can upgrade for $29.95.

ProVUE Development Corp. is at 15180 Transistor Lane, Huntington Beach, Calif. 92649; (714) 892-8199. — *By Dennis Klatzkin*



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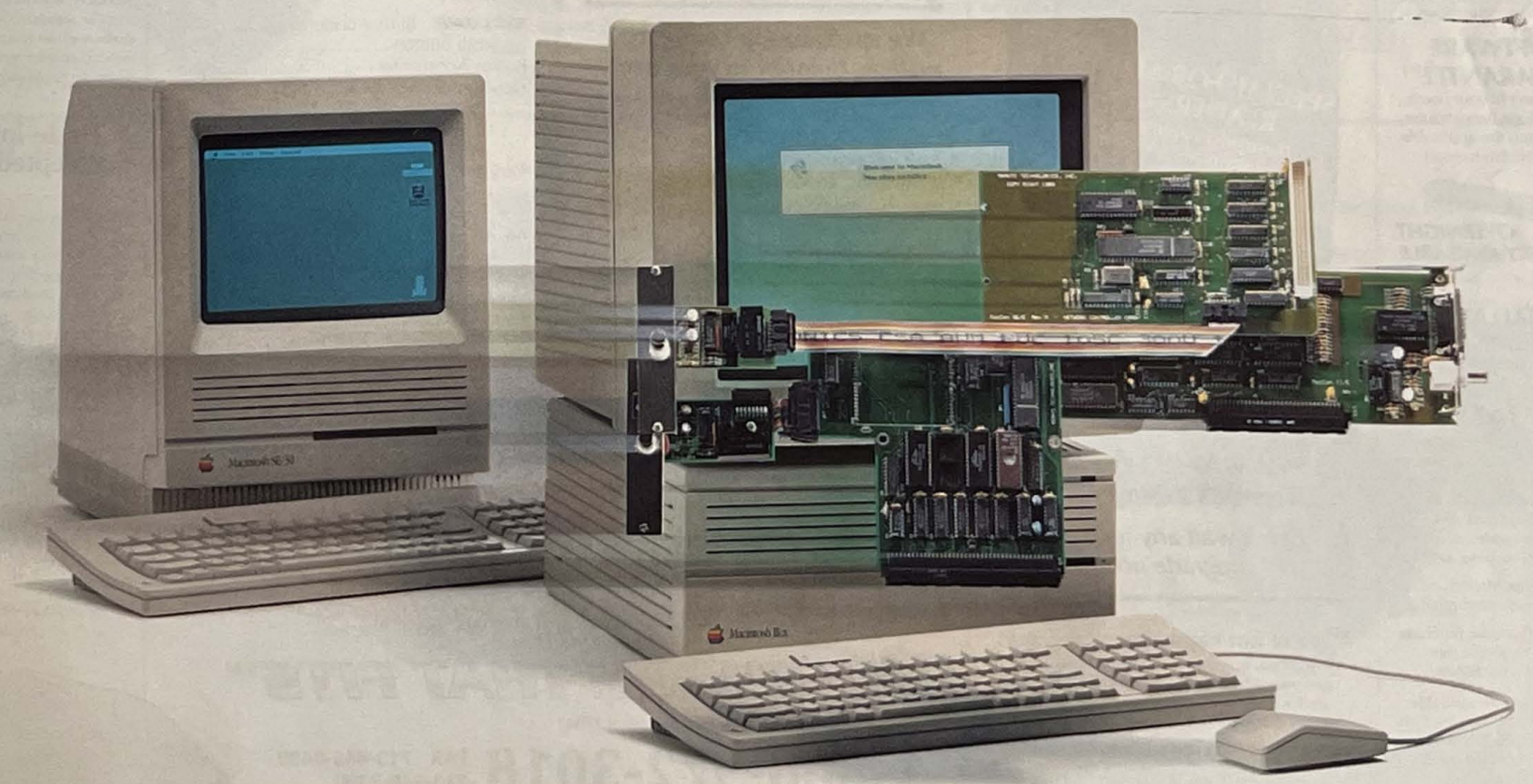

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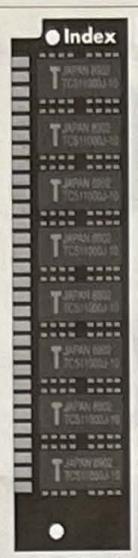

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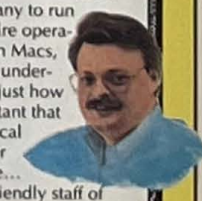

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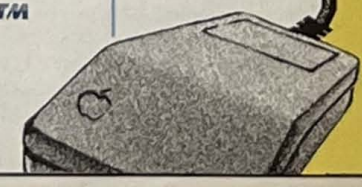

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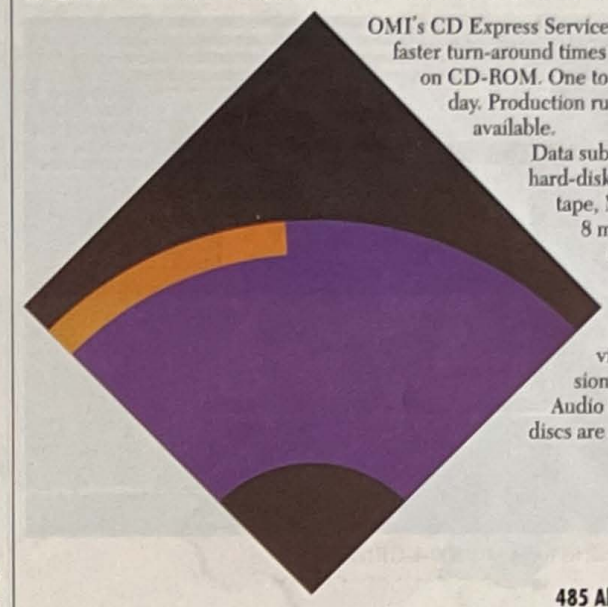

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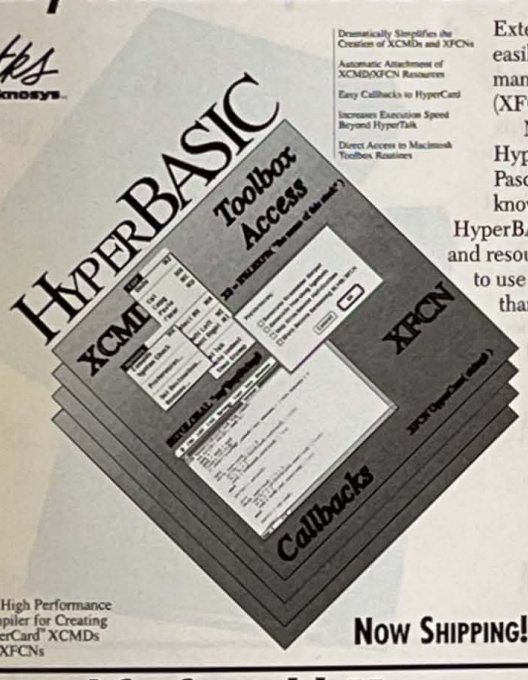

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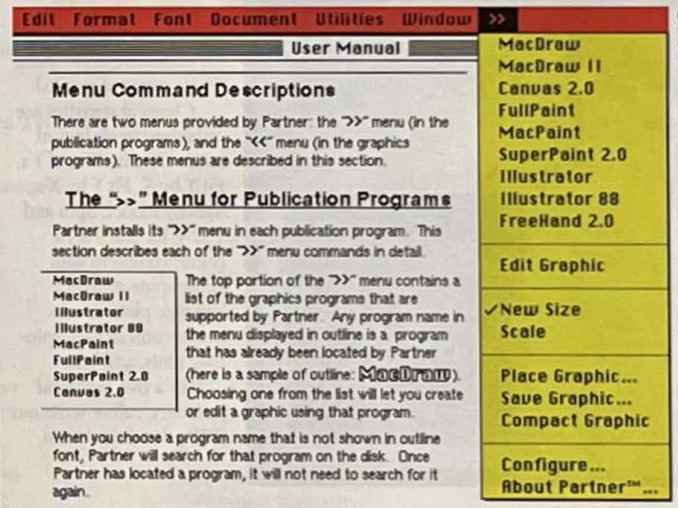
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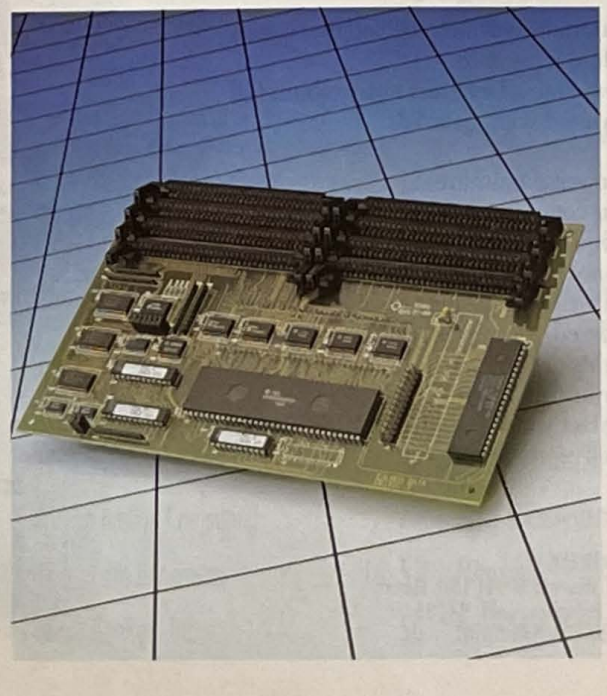

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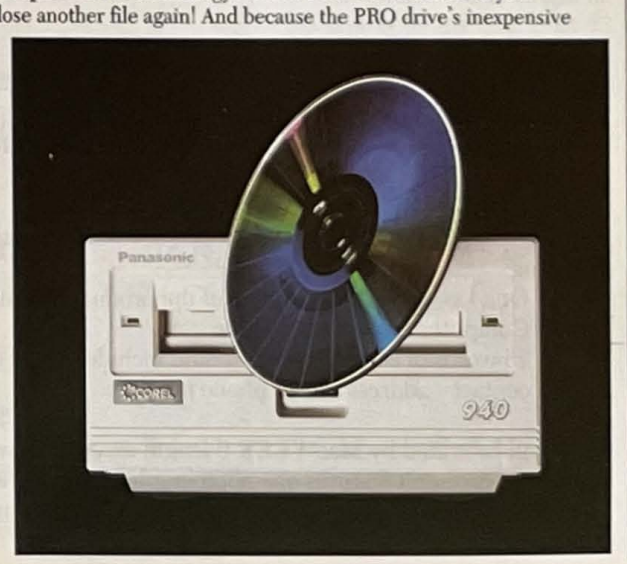

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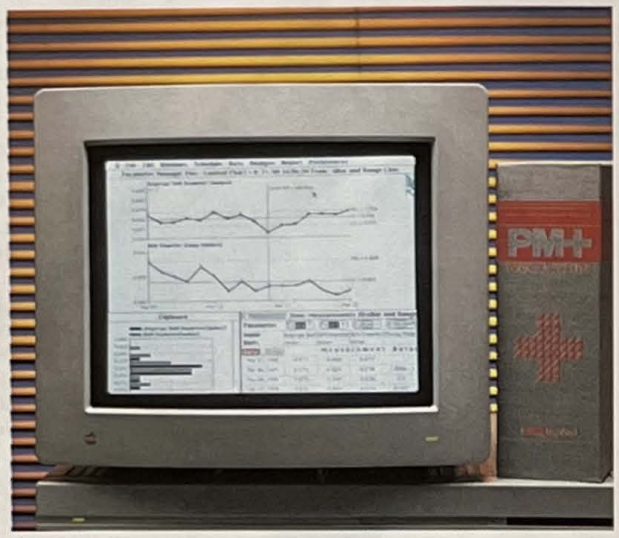

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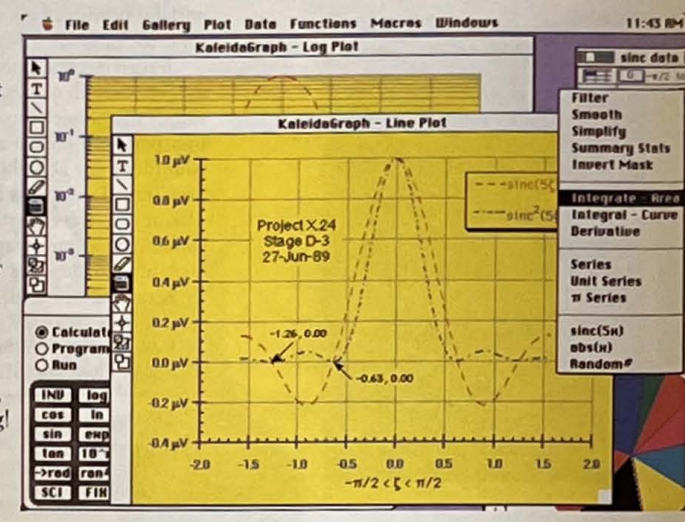

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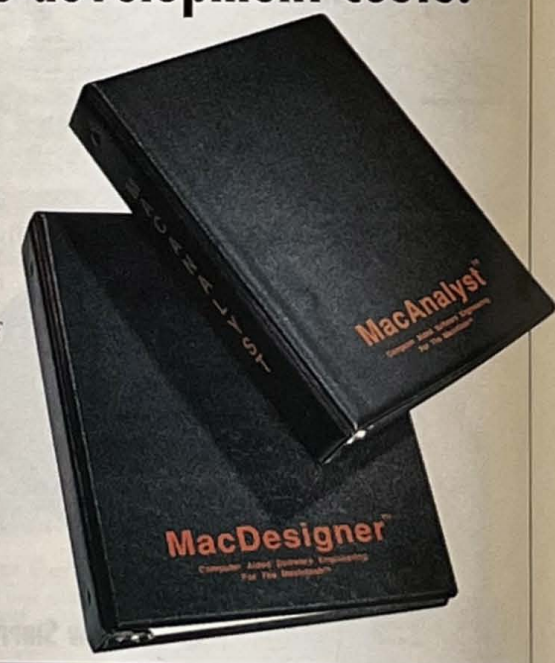

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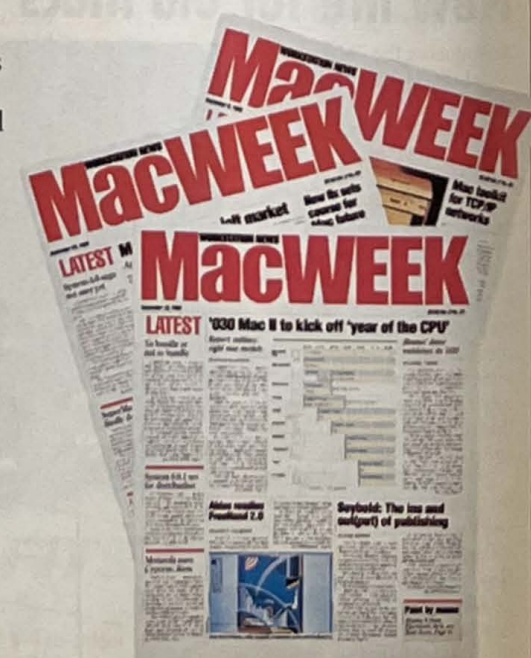

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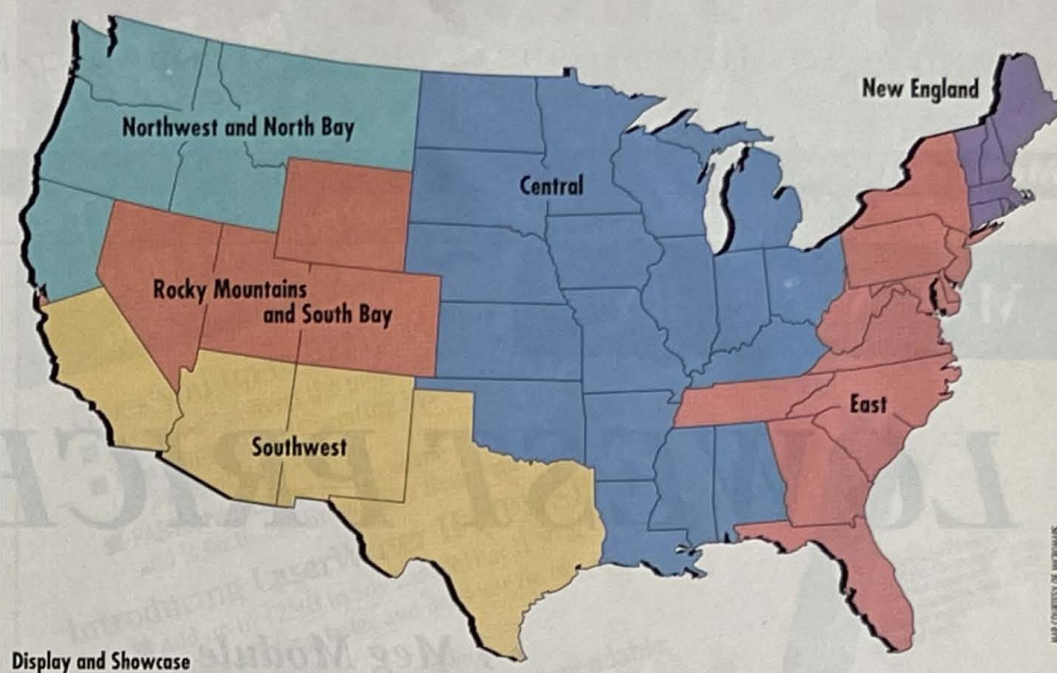

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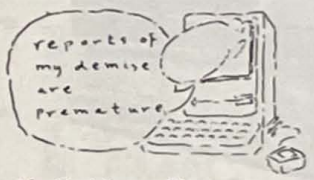

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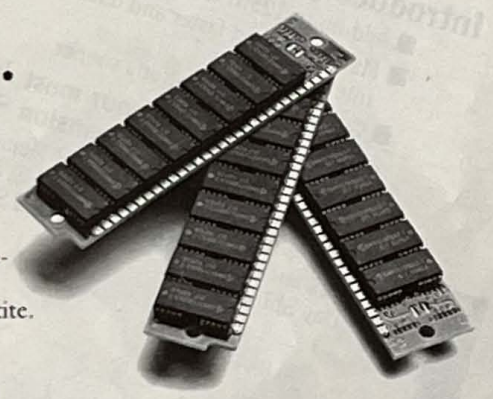

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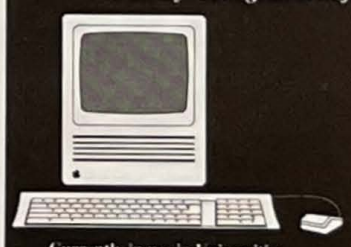
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Apple responds to sales slowdown

Measures include staff, benefit cuts

By Pamela Pfiffner

Cupertino, Calif. — Like many others who vowed to shape up in January, Apple is trying to slim down. In Apple's case, however, the belt-tightening measures announced last week are not a reaction to holiday bingeing but a long-range expense reduction plan.

In a letter to employees last week, Apple CEO John Sculley said the company will enact a series of cutbacks, including staff reductions and salary freezes, to "bring expense growth more in line with revenue growth."

Analyst Charles Wolf, vice president in equity research at First Boston Corp. of Boston, said that the reductions were not unexpected.

"Apple's been talking about bringing expense growth in line with revenue growth since last winter," Wolf said. "The element of surprise is that it was done sooner and more abruptly than it might have been."

The cutbacks were announced just days before the release of the company's 1990 first-quarter financial results (see related story, Page 1). Planning for the retrenchment went into high gear, sources said, after the company issued an advisory Dec. 12 warning that earnings for the quarter would grow more slowly than previously anticipated. Analysts cited sluggish sales — particularly of the company's low-end systems, the Apple II, Macintosh Plus and Macintosh SE — despite incentives provided by the holiday-season "Free Trial Run or Cash Back" promotion.

"Apple's reacting to the possibility of a bad year, triggered by the experience of December," Wolf said.

But Apple also pointed to an industrywide slowdown as a factor.

See Apple, next page

Apple Japan's Takeuchi seeks to make Mac a household item

By Connie Guglielmo

San Francisco — When Shigechika Takeuchi told his mother-in-law that he was leaving Toshiba Corp. to take a job with Apple, she asked why he was moving from the personal computer industry to the fruit business.

Although he laughs when he tells the story, Takeuchi, 43, is serious in describing one of the biggest challenges he faces as president of Apple Japan: to make Apple and the Mac household names in Japan.

Under a mandate from Apple CEO John Sculley, Takeuchi also has been charged with making Apple Japan a $1 billion company by the mid-1990s. Sculley expects that by the middle to late 1990s Apple Japan will be second to Apple USA in sales.

Takeuchi is the first to admit he has his work cut out for him. In a market dominated by Japanese manufacturer NEC Corp., the Macintosh enjoys only about a 2 percent share of the personal computer market. Until recently, Apple support for local developers was nonexistent, and although Apple has had a Japanese subsidiary since 1983, industry analysts there did not consider the company a serious player, according to Takeuchi.

"There was a lack of focus," said Takeuchi, speaking here earlier this month at the Japan Market Forum, a daylong conference co-sponsored by Apple, Macworld magazine and International Data Corp., a market research firm based in Framing-

See Japan, next page

Falcon fed franchise extended

By Pamela Pfiffner

Landover, Md. — Falcon Microsystems Inc., Apple's fifth largest reseller and its primary distributor to the federal government, has signed a contract that makes it the exclusive holder of the General Services Administration Schedule C, the federal purchasing catalog for personal computer products, for Apple for the next three years.

Falcon has held Schedule C for Apple since 1983, and Falcon's sales have roughly doubled each year during that period. But this is the first time the two companies have signed a multiyear contract.

"It is appropriate to make a long-term commitment, since it's hard to plan on a one-year basis," said Ken Hansen, Falcon vice president of marketing.

"We are pleased to see a more stable relationship," said Steve Broughall, president of the Pentagon Macintosh Users Group.

The deal could mean $500 million in sales for Apple through March 1993, when the agreement ends. The new Apple contract comes on the heels of several shake-ups at Falcon. Earlier this month Falcon President Tom Ellis resigned, and two weeks ago the company laid off 34 employees, nearly 10 percent of its work force.

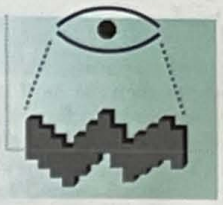
"We went through a restructuring and a redefining of some areas," Hansen said, adding that some positions were lost when the company merged its customer service and sales groups. Hansen said the restructuring was in part a response to thin margins resulting from bidding wars among government resellers.

Falcon Microsystems Inc. is at 1801 McCormick Drive, Landover, Md. 20785; (201) 341-0100. □

Mac team has reunion at MUCoW meeting

CHUCK MACKE/PICTURE GROUP

Palo Alto, Calif. — Members of the original Mac development team made a rare public appearance together here last week at a meeting of MUCoW (Macintosh Users of ComputerWare). Burrell Smith, 5-year-old Laura Atkinson and her father Bill, Joanna Hoffman, and Andy Hertzfeld (shown above, left to right), along with Daniel Kottke, Patti King-Kenyon and Larry Kenyon, reminisced about the "good old days" at Apple and discussed the state of the company, the industry and their own work.



Business BRIEFS

U.S. Memories consortium calls it quits

Dallas — U.S. Memories, the consortium of computer companies and chip suppliers that had hoped to revive production of dynamic RAM (DRAM) in this country, announced its demise last week. The consortium had the backing of IBM Corp., Digital Equipment Corp., Hewlett-Packard Co. and Intel Corp., but Apple announced in September that it would not participate.

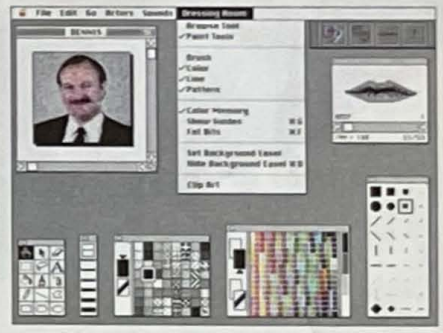
The end came when a meeting of committed and prospective participants held here earlier this month made it clear that U.S. Memories would be unable to win sufficient investment and purchase commitments to launch the 4-Mbit DRAM production line it had planned.

Bright Star receives patent on HyperAnimation technology

Bellevue, Wash. — Bright Star Technology Inc. announced last week that it has been granted a broad patent on HyperAnimation, a user-interface technology that employs talking agents. The patent, issued Dec. 5, 1989, came in response to an application filed by Elon Gasper, company founder, in 1986. Bright Star was incorporated in 1987.

Among the 33 claims recognized in the patent are techniques for creating lifelike computer-animated agents by using key-frame random-access animation. The company uses the patented technology in the RAVE (Random-access Animation and Vivification Engine) drivers for its $199.95 HyperAnimator product and its new $499.95 interFACE package. Due this week, interFACE adds support for color, additional facial expressions and other programs that can support external commands.

Bright Star Technology Inc. is located at 1450 114th Ave. S.E., Suite 200, Bellevue, Wash. 98004; (206) 451-3697.



Bright Star's patent on HyperAnimation covers various techniques for creating lifelike talking agents via random-access animation with its user-interface building program.

High Performance Computing Coalition to lobby Congress

Washington — Apple this month joined 25 businesses, universities and trade associations to form the High Performance Computing Coalition, a new lobbying group that hopes to generate backing on Capitol Hill for a variety of proposals that call for increased federal government support and funding for supercomputing technologies.

The coalition, which also includes Cray Research Inc., Digital Equipment Corp. and Hewlett-Packard Co., among others, will seek congressional authorization and funding for the creation of a National Research and Education Network that would connect the nation's supercomputing centers at multigigabyte speeds; increased education and training of computer scientists and engineers; increased research into high-speed computation and funding for the development of prototype equipment; and construction of federal data banks, software libraries and research facilities.

For more information on the High Performance Computing Coalition, contact the American Electronics Association, 1225 Eye St. N.W., Washington, D.C. 20006; (202) 682-9110.

Apple

From previous page

"We operate in a cyclical industry where even the most successful companies must have the flexibility to move quickly when times get tougher," Sculley wrote in the two-page memo. "This is one of those times."

Apple spokeswoman Carleen LeVasseur said that Apple had been "managing under the assumption that industry growth was slowing, but we didn't expect the slower growth to happen this soon."

The cost-cutting measures outlined by Sculley include:

▶ The reduction of an unspecified number of employees in the Bay area, where 5,500 of Apple's 12,000 employees are based. The cuts are to be achieved through "normal head-count attrition," the company said, as well as the elimination of unfilled positions. In addition, some positions will be consolidated, and employees headquartered in Cupertino will be transferred to field operations, the company said. Some sources close to Apple said, however, that substantial outright layoffs, particularly in its marketing and customer satisfaction groups, are under consideration.

▶ The modification of Apple's profit-sharing plan so that it "relates more closely to the performance of our business plan." Pending approval by Apple's board of directors, a revised profit-sharing plan will go into effect April 1; its impact is expected to be felt in midsummer with the company's third-quarter profit-sharing distribution, LeVasseur said. Last year Apple shelled out $49.4 million in profit sharing.

▶ A decrease in the frequency of salary reviews, which means fewer raises. Salaries are currently reviewed every six months. Under the cost-reduction measures, reviews will be conducted in a 12-month cycle. Salary reviews for vice presidents and executive staff have been pushed back to the first quarter of 1991. According to LeVasseur, this is the second year in a row executive salary increases have been postponed.

▶ The elimination of automobiles as part of executive compensation packages. Until April 1, when the cut will be enacted, more than 100 Apple employees, or "everyone from director on up," is eligible for a car, LeVasseur said. The measure will not affect salespeople and others who have been assigned cars.

"We've succeeded in times of rapid growth," Sculley continued. "Now, we must prove we can succeed in times of slower growth."

Wolf said that expense reductions are not the key to Apple's success in 1990. "What will be important to Apple is not cutting out company cars. It's bringing out System 7.0 on time and with most of its promised features. It's new entry-level products and connectivity solutions," he said. □

Japan

From previous page

ham, Mass. Sculley and Ian Diery, head of Apple Pacific, also were on hand to encourage third-party development of Kanji-based products.

Although he has been on the job for only 11 months, Takeuchi has already helped steer the company in more-profitable directions. Apple Japan's revenues for fiscal 1989, which ended Sept. 30, were $200 million, up 80 percent over the previous year's. Japan now has more than 20 authorized Apple dealers and more than 800 retail outlets touting Mac wares, including two AppleCenters (Apple-designed stores that showcase Mac technology). According to Satjiv Chahil, marketing director for Apple Pacific, the installed base of Macs in Japan will reach 100,000 by this summer.

The Apple Japan Developer Program is now in place to provide both technical and marketing support to local developers. About 50 software packages that support Kanji are available, but Takeuchi said he is confident his developer services team can mobilize U.S. developers and help U.S. third parties team up with Japanese distributors and companies that can localize U.S.-made products.

Most important, Apple has promised to eliminate the six-month lag time that until now has separated product introductions in the United States and Japan. Within a year, the company hopes its test and development centers in Cupertino, Calif., and Japan will be able to handle simultaneous product launches — a matter of having Kanji versions of the Macintosh operating system immediately available for new systems.

Takeuchi also hopes that in time Apple will be able to supply multilingual communities. Currently, foreign language versions of the Mac operating system are unavailable outside the countries for which they are developed.

"It's a question of being able to provide service and support," Takeuchi said, adding that Apple is looking into offering Kanji versions of the Mac to the growing population of Japanese nationals living in the United States. "Apple is selling the same computer to everyone around the world," he said. "It is one of the only computer companies that can offer a multilingual computer environment without any hardware modifications. That is Apple's strength." □

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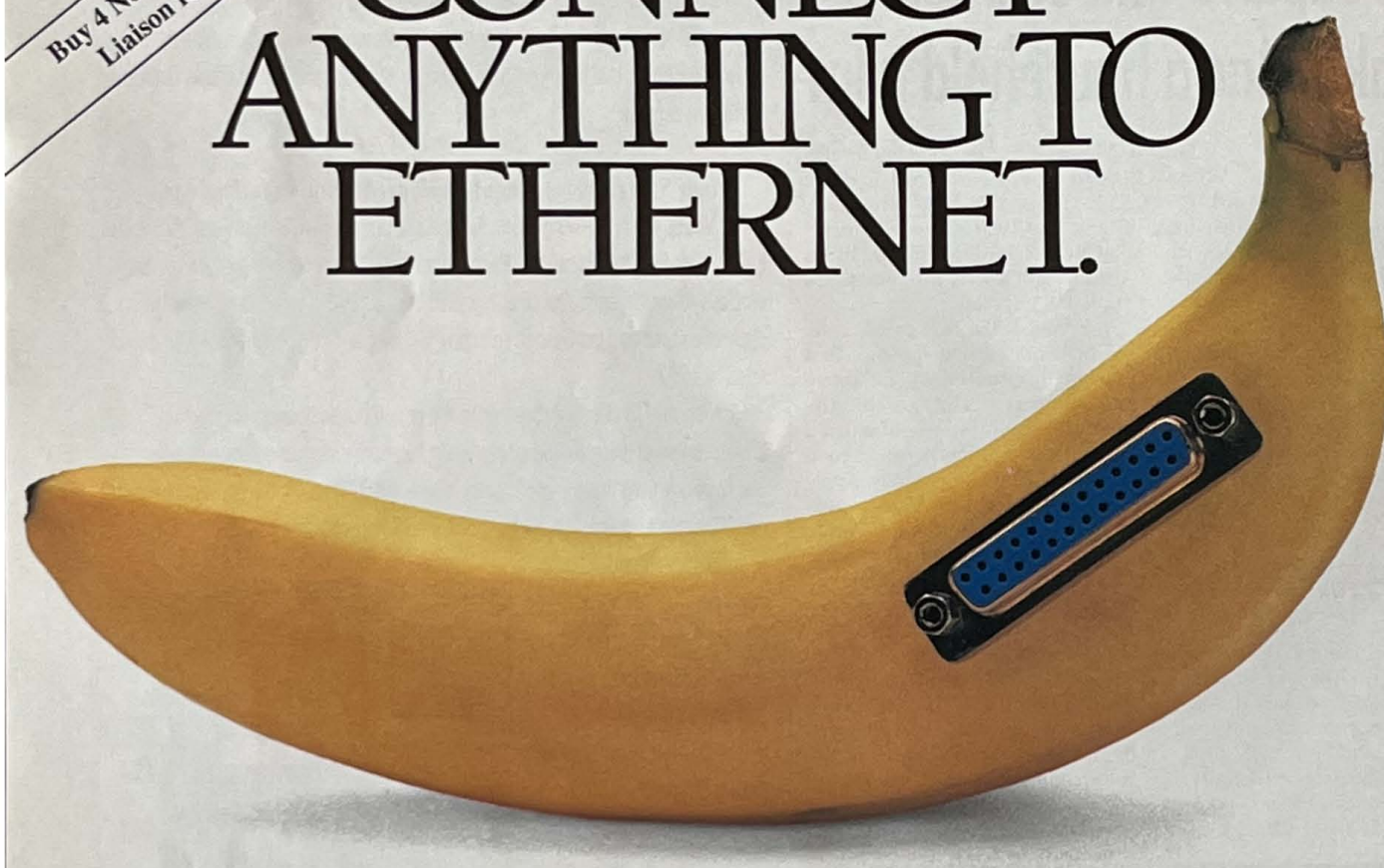

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MarketWEEK

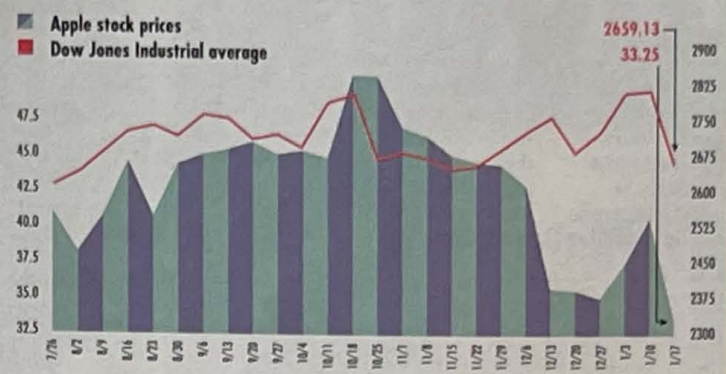
STOCKWATCH

Businessland, Apple stocks dip after reports of job cuts

Microcomputer price wars together with slowing growth in the industry took their toll on Apple and Businessland Inc. stocks during the second week of the new year.

Apple witnessed its share of sell orders last week following reports it will eliminate an undetermined number of jobs, mostly at its Cupertino, Calif., headquarters, and reduce new hirings. Apple lost 7.64 percent to close at $33.25 a share, only 75 cents above its 12-month low of $32.50.

Businessland, the nation's largest personal computer dealer, unleashed similar results when it announced plans to lay off 5 percent to 7 percent of its worldwide work force. The company also said it may take a one-time charge related to these severances against fiscal third-quarter earnings. Businessland's stock fell 12.9 percent a share, making it the largest loser in MacWEEK's portfolio.



Mac-related stocks

	CLOSING 1/10/90	CLOSING 1/17/90	PERCENT CHANGE	P/E RATIO	ANNUAL HIGH	ANNUAL LOW
MAC-RELATED COMPANIES						
Adobe Systems Inc.	22.00	22.75	3.41	15	30.00	14.00
Aldus Corp.	16.25	16.25	0.00	14	24.50	12.25
Apple	**36.00**	**33.25**	**-7.64**	**9**	**50.38**	**32.50**
Ashton-Tate Corp.	11.13	11.38	2.25	-21	24.00	8.75
Businessland Inc.	7.75	6.75	-12.90	7	15.25	6.75
Microsoft Corp.	88.25	87.50	-0.85	27	92.00	45.75
Motorola Corp.	61.25	59.88	-2.24	16	63.63	39.50
Seagate Technology Inc.	15.63	15.63	0.00	11	16.25	9.38
3Com Corp.	13.00	12.13	-6.73	14	28.75	10.00
INDUSTRY INDICATORS						
Digital Equipment Corp.	87.50	87.88	0.43	11	122.38	79.75
IBM	99.00	98.88	-0.13	11	130.88	93.38
Sun Microsystems Inc.	16.38	16.50	0.76	29	23.00	13.00

Compiled by Nordby International Inc., Boulder Creek, Colo.

MARKETWATCH

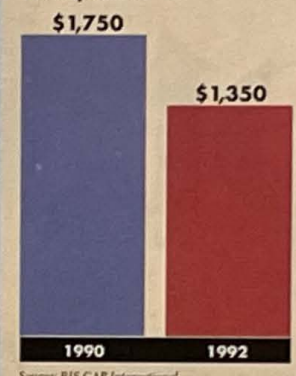
Scanner revenues expected to grow as prices decline

Following a familiar pattern, production of scanners is expected to increase, causing lower prices and, in turn, boosting scanner purchases.

Market research company BIS CAP International of Waltham, Mass., predicts the average price of desktop scanners will decline from about $1,750 in 1990 to $1,350 in 1992.

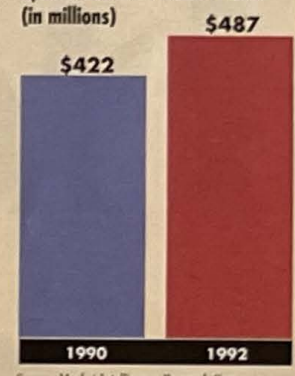
Despite lower prices, revenue from U.S. scanner sales (including optical character readers, which account for about 19 percent of overall revenue) will grow from $422 million in 1990 to $487 million by 1992, according to Market Intelligence Research Corp. of Mountain View, Calif. — *By Griffin Dix*

Average U.S. price for desktop scanner



Source: BIS CAP International

Revenue from U.S. scanner and optical character reader sales (in millions)



Source: Market Intelligence Research Corp.

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Low-cost Macintosh looms

It was a dark day in Cupertino last week when Apple announced cost-cutting measures designed to shore up its sagging bottom line. Wild rumors were heard that layoffs could number 500 or even 1,000, and all unfilled positions, including ones planned to beef up the customer satisfaction department, are now off the organization chart.

Most sobering, perhaps, is Apple's decision to no longer provide executives with company cars. But Mac the Knife, always on the lookout for a silver lining, realized that the used BMW market may suddenly be flooded with desirable models. Maybe Apple will have a fleet sale. But does this mean that Jean-Louis will soon be tooling around in a Deux Chevaux?

Perhaps indicating that at least some of Apple's troubles are related to its ignoring the low end of the market, reports are filtering in that the board of directors decided last week to move up the introduction of a low-cost Mac by six months. By the Knife's calculations, that means it could be out in the first half of this year. Pray for this one.

The belt-tightening is expected to have no effect on the anticipated introduction of a low-cost, four-page-per-minute LaserWriter incorporating the same printing mechanism as the HP LaserJet IIP. Much to John Warnock's delight, the new printer is expected to include Adobe PostScript, a fact that should both assure Adobe's continued cash inflow from Apple and send a strong psychological signal that there's still a lot of life left in the Apple-Adobe relationship. The Knife also reports that Adobe is expected to release an IBM PC-compatible version of ATM before the end of the year.

Field fix. It appears that Apple may have finally developed a cost-effective solution to a problem many Apple CD-ROM owners have complained about: dust collecting on the lens, which results in read failures. According to usually reliable sources, Apple is considering a February announcement of a field engineering upgrade to solve the problem. Apple dealers will simply either disconnect or remove the unit's internal fan. Does this mean that the CD-ROM drive was overengineered in the first place?

The big bucks. Why are Charlie and Hallie Jackson smiling while most of the rest of the Silicon Beach crew are contemplating an uncertain future? Perhaps because the Jacksons may get the lion's share (88 percent) of the stock Aldus plans to swap in the proposed buyout. Most likely, Charlie will remember the folks who helped him make all this possible. There should be plenty of money left over to cover firing-range fees.

What is less clear is exactly how Aldus will position the newly acquired products. Although some Aldus marketing people reportedly are less than enthusiastic about SuperCard, the Knife speculates that Aldus wants to aggressively market the product under its own label and later introduce a PC version. Personal Press could be rolled into a new low-end PageMaker. Aldus will then create a Silicon Beach division to market the remainder of the Silicon Beach line.

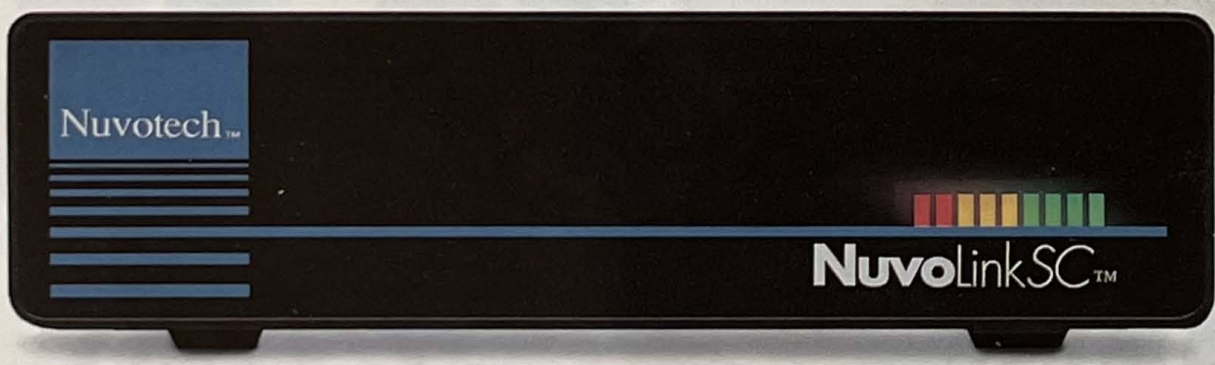
Sources close to RasterOps see four new products on the horizon. Two are expected to be very low-cost color boards, perhaps along the lines of its $995 24-bit color board for 13-inch monitors. Another product is said to be a multimedia board capable of integrating video and special effects. The fourth board is expected to be a graphics accelerator designed to compete directly with existing products from Radius and SuperMac. The Knife's sources claim that RasterOps' accelerator will significantly outperform the competition.

Death by HeloCar? An interesting rumor about BBDO, Apple's advertising agency, reached the Knife's desk this week. Sources are saying that Apple is planning an agency review, so it's possible that BBDO may get the ax.

Less is enough. When Lotus realized that Mac 1-2-3 was running nine months late because of indecision among members of the Mac 1-2-3 team (they couldn't decide whether to make the product a quick-and-dirty Lotus 1-2-3-compatible or a rich-featured Mac product), some management changes were quickly made. As a result, Mac 1-2-3 is scheduled for a first-quarter-of-1991 intro as a minimalist, Lotus 1-2-3-compatible program. □

A MacWEEK mug makes the perfect oatmeal scoop. A reliable tip is all we ask. Contact Mac the Knife at (415) 243-3500 or MCI (MactheKnife).

Hot link.



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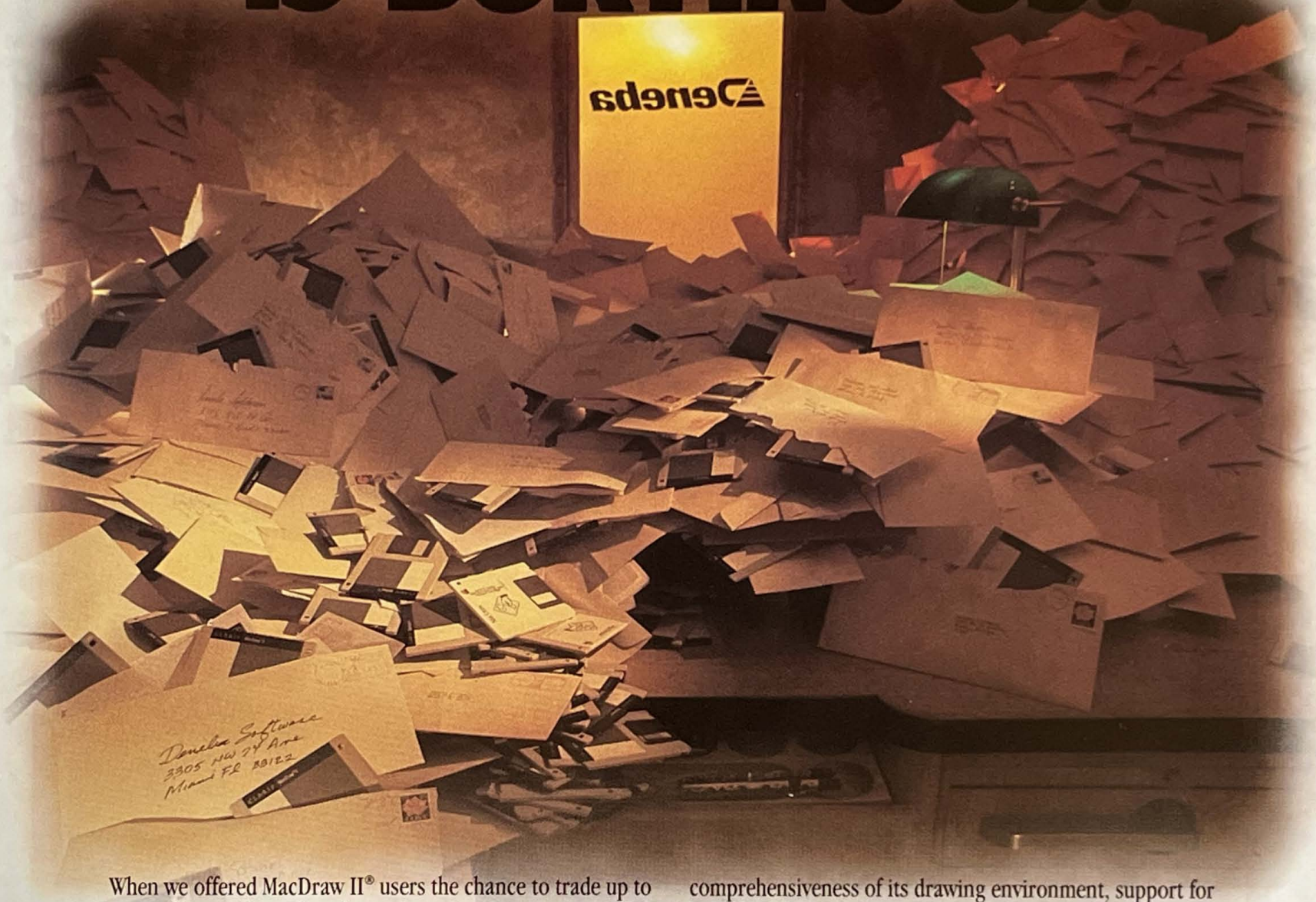

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MacWeek went on: "Canvas can position objects extremely accurately – down to one sixty-four-thousandth of an inch ... a boon to technical illustrators and others with low-range drafting needs."

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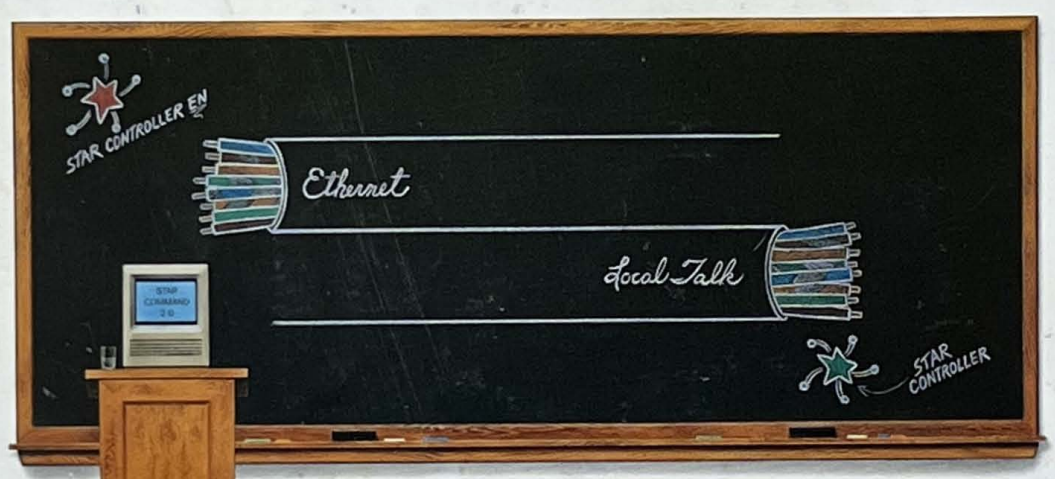
Introducing ethernet.



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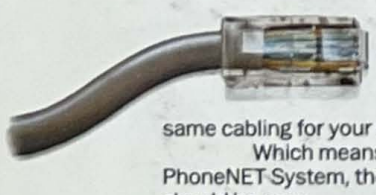

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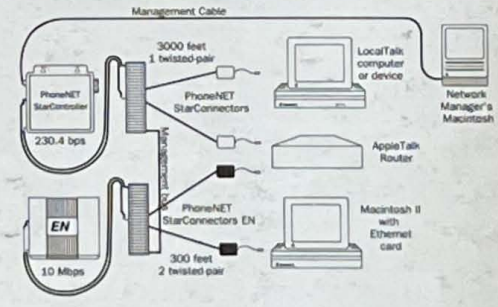

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